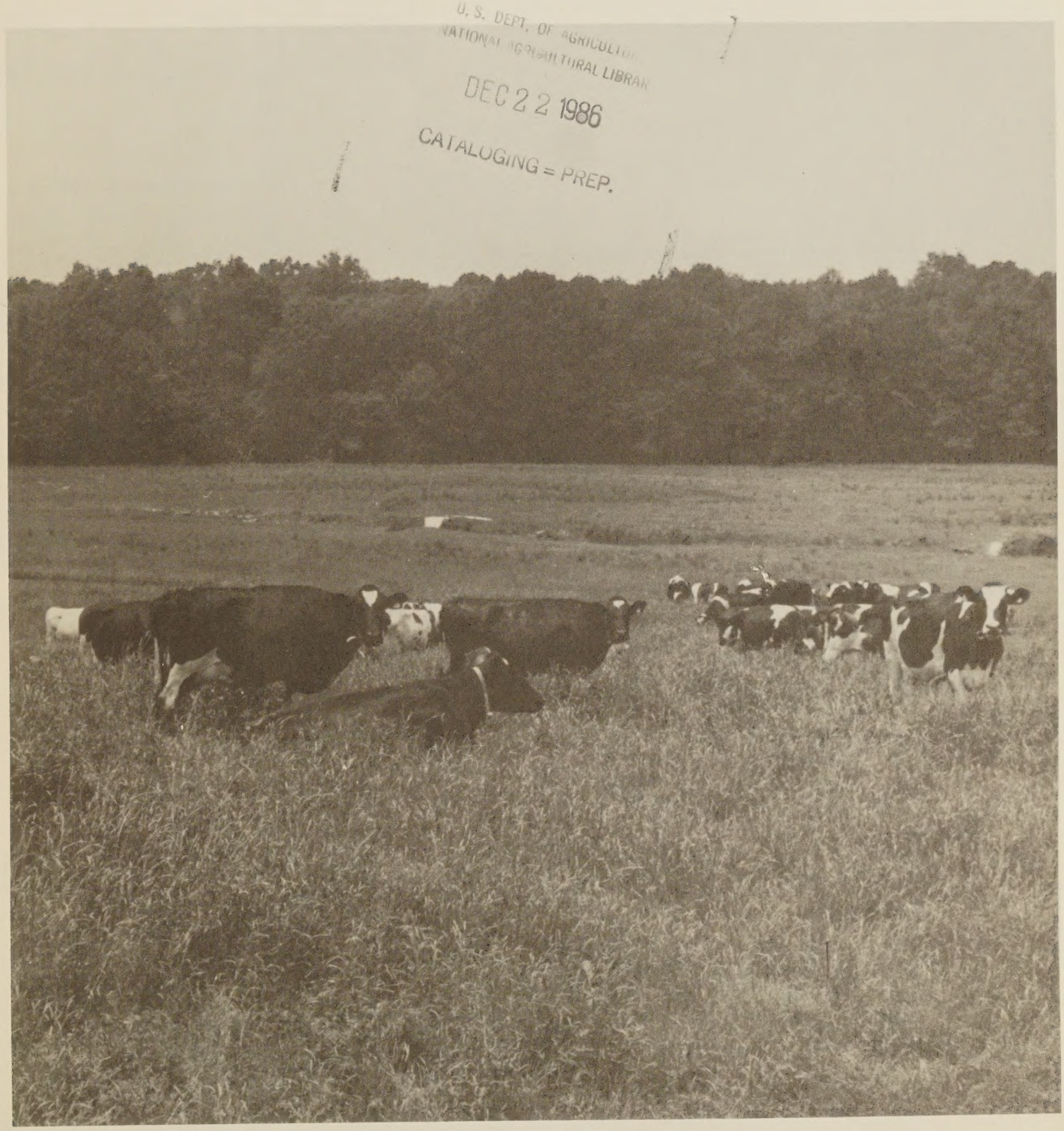
United States Department of Agriculture

Soil Conservation Service

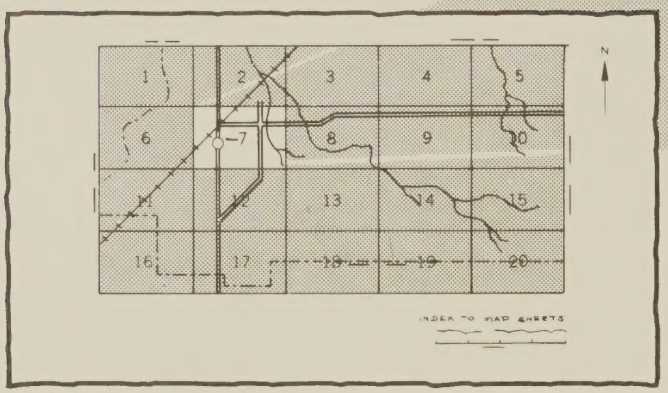
In cooperation with United States Department of Agriculture, Forest Service, and Mississippi Agricultural and Forestry Experiment Station

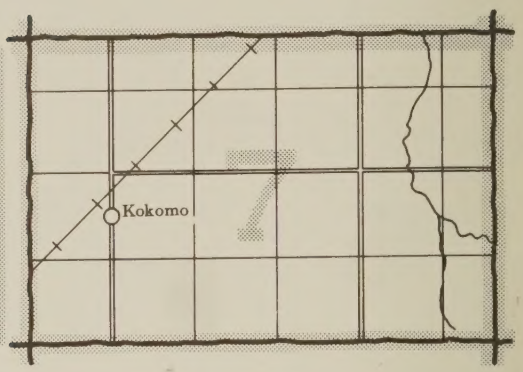
Soil Survey of Choctaw County, Mississippi



HOW TO USE

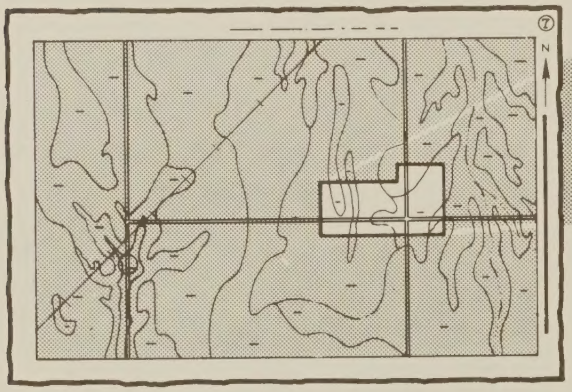
1. Locate your area of interest on the "Index to Map Sheets"

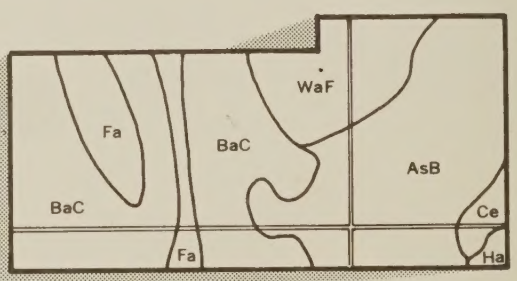




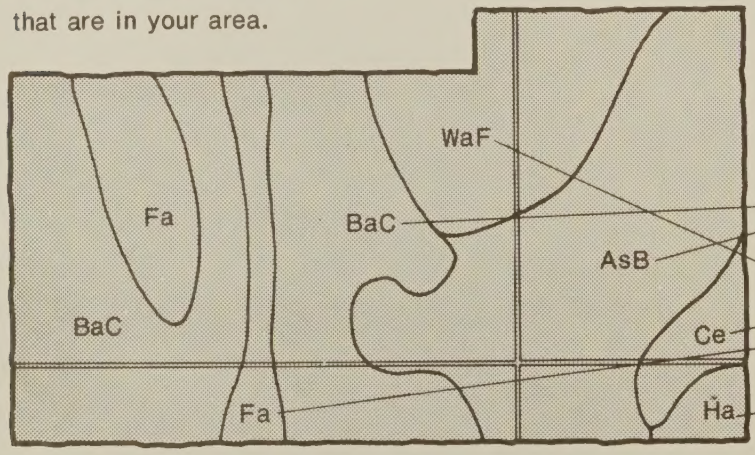
2. Note the number of the map sheet and turn to that sheet.

3. Locate your area of interest on the map sheet.





4. List the map unit symbols that are in your area.



Symbols

AsB
BaC
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Fa
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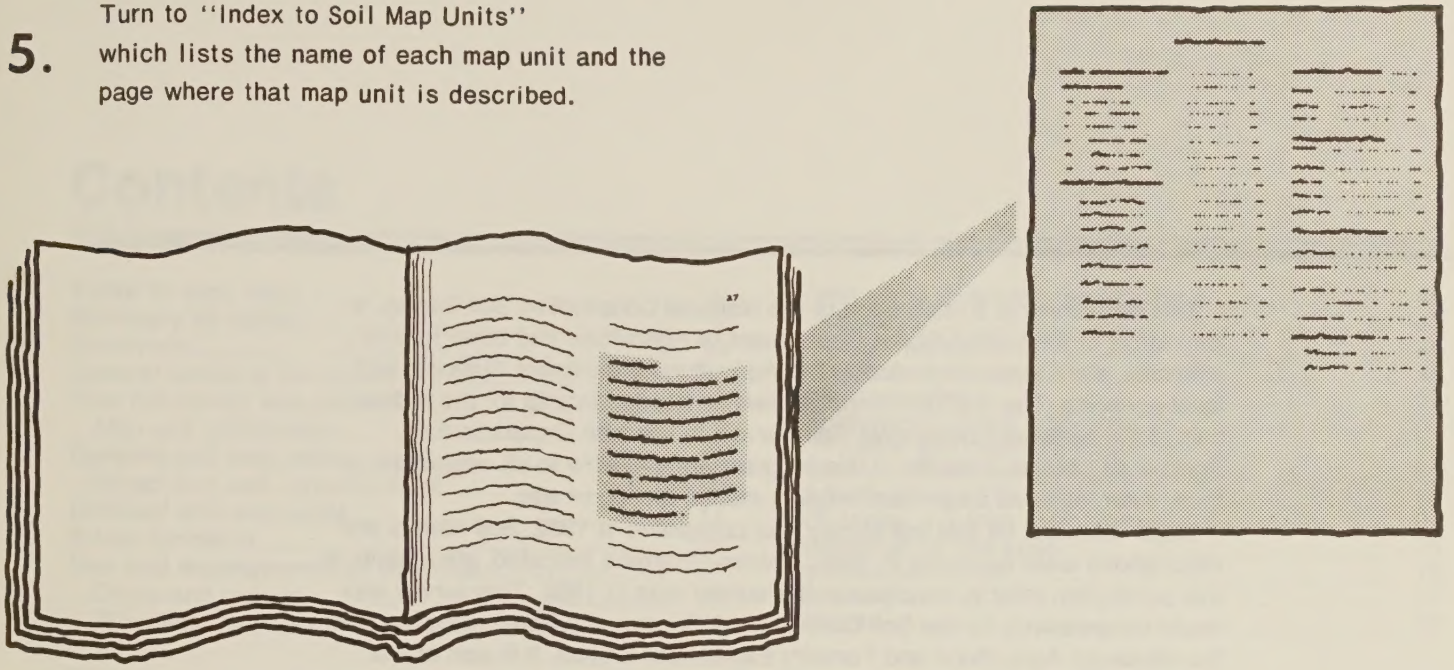
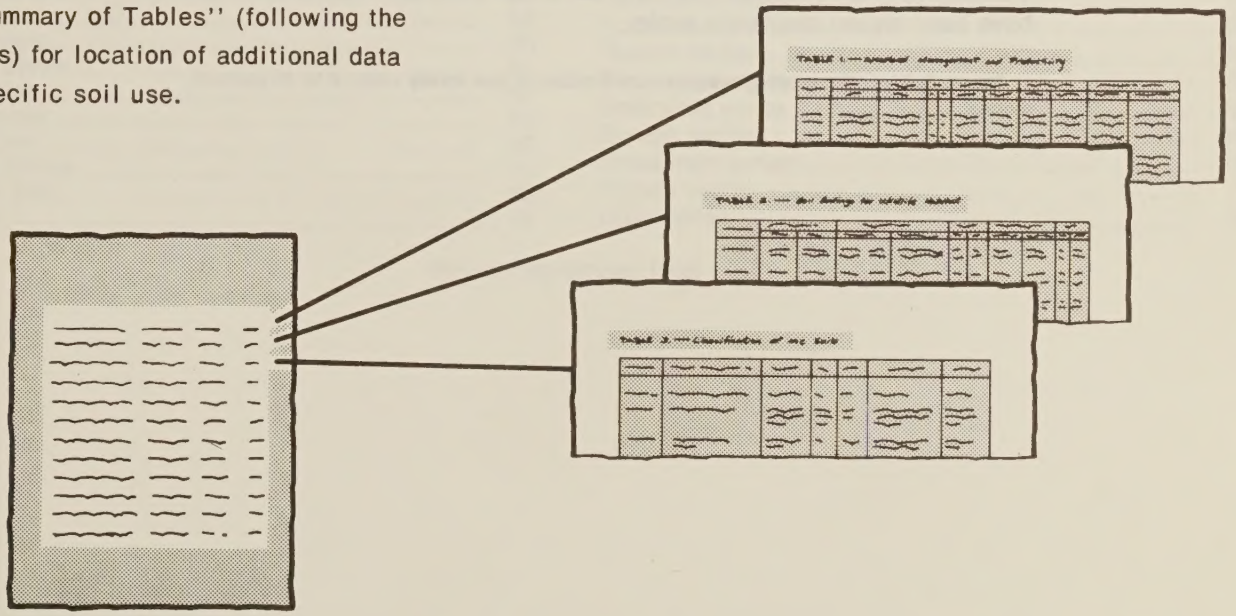
THIS SOIL SURVEY

5. Turn to "Index to Soil Map Units" which lists the name of each map unit and the page where that map unit is described.



6. See "Summary of Tables" (following the Contents) for location of additional data on a specific soil use.



7. Consult "Contents" for parts of the publication that will meet your specific needs. This survey contains useful information for farmers or ranchers, foresters or agronomists; for planners, community decision makers, engineers, developers, builders, or homebuyers; for conservationists, recreationists, teachers, or students; to specialists in wildlife management, waste disposal, or pollution control.

This soil survey is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other federal agencies, state agencies including the Agricultural Experiment Stations, and local agencies. The Soil Conservation Service has leadership for the federal part of the National Cooperative Soil Survey. In line with Department of Agriculture policies, benefits of this program are available to all, regardless of race, color, national origin, sex, religion, marital status, or age.

Major fieldwork for this soil survey was completed in 1982. Soil names and descriptions were approved in 1982. Unless otherwise indicated, statements in this publication refer to condition in the survey area in 1982. This survey was made cooperatively by the Soil Conservation Service, the Forest Service, and the Mississipi Agricultural and Forestry Experiment Station. It is part of the technical assistance furnished to the Choctaw County Soil and Water Conservation District.

Soil maps in this survey may be copied without permission. Enlargement of these maps, however, could cause misunderstanding of the detail of mapping. If enlarged, maps do not show the small areas of contrasting soils that could have been shown at a larger scale.

Cover: Dairy cattle grazing ryegrass on Smithdale fine sandy loam, 8 to 15 percent slopes.

Contents

Soil Series

Issued September 1986

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Summary of Tables

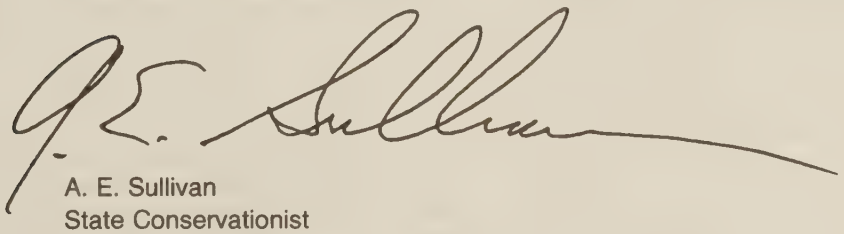
Foreword

This soil survey contains information that can be used in land-planning programs in Choctaw County. It contains predictions of soil behavior for selected land uses. The survey also highlights limitations and hazards inherent in the soil, improvements needed to overcome the limitations, and the impact of selected land uses on the environment.

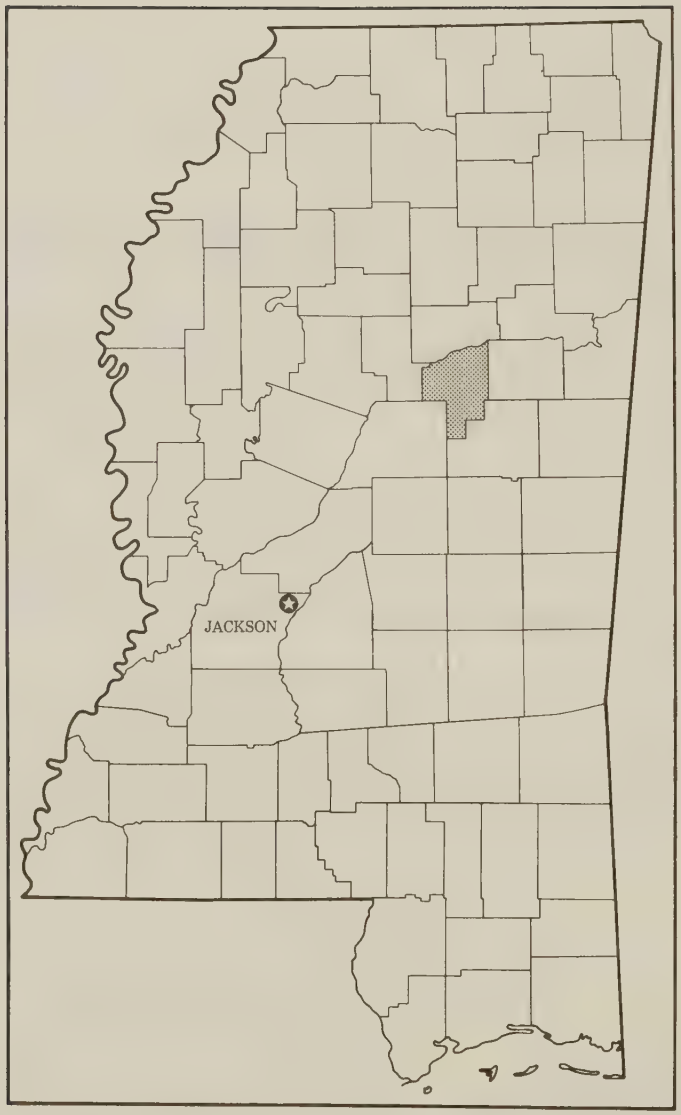
This soil survey is designed for many different users. Farmers, ranchers, foresters, and agronomists can use it to evaluate the potential of the soil and the management needed for maximum food and fiber production. Planners, community officials, engineers, developers, builders, and home buyers can use the survey to plan land use, select sites for construction, and identify special practices needed to insure proper performance. Conservationists, teachers, students, and specialists in recreation, wildlife management, waste disposal, and pollution control can use the survey to help them understand, protect, and enhance the environment.

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are shallow to bedrock. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

These and many other soil properties that affect land use are described in this soil survey. Broad areas of soils are shown on the general soil map. The location of each soil is shown on the detailed soil maps. Each soil in the survey area is described. Information on specific uses is given for each soil. Help in using this publication and additional information are available at the local office of the Soil Conservation Service or the Cooperative Extension Service.



A. E. Sullivan
State Conservationist
Soil Conservation Service



Location of Choctaw County in Mississippi.

Soil Survey of Choctaw County, Mississippi

By James W. McMullen, Soil Conservation Service

United States Department of Agriculture, Soil Conservation Service and Forest Service
In cooperation with
Mississippi Agricultural and Forestry Experiment Station

CHOCTAW COUNTY is in northeast Mississippi. Its land area is 266,880 acres, or about 417 square miles. The Big Black River forms most of the northern boundary of the county. The maximum north-south dimension of the county is about 29 miles, and the east-west dimension about 21 miles. Ackerman, the county seat, is 108 miles northeast of Jackson, the state capital, and 26 miles southwest of Mississippi State University.

The first soil survey of Choctaw County was published in 1923 *(9).* This survey updates the information in the earlier one and supplies larger maps that show the soils in greater detail.

The descriptions, names, and delineations of soils in this survey do not fully agree with those on soil maps of adjacent counties. Disparities are the result of better knowledge of soils, modifications in series concepts, different intensities of mapping, or differences in the extent of soils within the survey areas.

General Nature of the County

This section provides information of general interest about the county. It briefly discusses the climate, geology, topography, drainage, early agriculture, settlement and development, and landscape resources of Choctaw County.

Climate

Prepared by the National Climatic Center, Asheville, North Carolina.

Choctaw County has long, hot summers because moist tropical air from the Gulf of Mexico persistently covers the area. Winter is cool but fairly short. The rare cold waves moderate in 1 or 2 days. Precipitation is fairly heavy throughout the year, and prolonged droughts are rare. Precipitation in summer comes mainly as afternoon thunderstorms and is adequate for all crops.

Table 1 gives data on temperature and precipitation for the survey area as recorded at Eupora, Mississippi, in the period 1951 to 1978. Table 2 shows probable dates of the first freeze in fall and the last freeze in spring. Table 3 provides data on length of the growing season.

In winter the average temperature is 46 degrees F, and the average daily minimum temperature is 34 degrees. The lowest temperature on record, which occurred at Eupora on January 12, 1962, is -7 degrees. In summer the average temperature is 79 degrees, and the average daily maximum temperature is 91 degrees. The highest recorded temperature, which occurred at Eupora on July 27, 1952, is 110 degrees.

Growing degree days are shown in table 1. They are equivalent to "heat units." During the month, growing degree days accumulate by the amount that the average temperature each day exceeds a base temperature (50 degrees F). The normal monthly accumulation is used to schedule single or successive plantings of a crop between the last freeze in spring and the first freeze in fall.

The total annual precipitation is 55 inches. Of this, 25 inches, or about 50 percent, usually falls in April through September. The growing season for most crops falls within this period. In 2 years out of 10, the rainfall in April through September is less than 21 inches. The heaviest 1-day rainfall during the period of record was 6.68 inches at Eupora on October 12, 1970. Thunderstorms occur on about 65 days each year, and most occur in summer.

Snowfall is rare. In 80 percent of the winters, there is no measurable snowfall. In 15 percent, the snowfall,

usually of short duration, is more than 5 inches. The heaviest 1-day snowfall on record was more than 11 inches.

The average relative humidity in midafternoon is about 60 percent. Humidity is higher at night, and the average at dawn is about 90 percent. The sun shines 60 percent of the time possible in summer and 50 percent in winter. The prevailing wind is from the south. Average windspeed is highest, 9 miles per hour, in winter.

Severe local storms, including tornadoes, strike occasionally in or near Choctaw County. These storms are short and cause variable and spotty damage. Every few years in summer or autumn, a tropical depression or remnant of a hurricane causes extremely heavy rain in the area for 1 to 3 days.

Geology

The bedrock of Choctaw County consists mainly of the Midway Group (Paleocene Series) and the Wilcox and Claiborne Groups (Eocene Series) *(3)*. The Midway Group is the oldest, and the Claiborne Group is the youngest. In many areas, the bedrock was covered with loess during the Pleistocene Epoch. The loess mantle is thickest in the nearly level areas in the western part of the county and thins out toward the east.

The Porters Creek Formation of the Midway Group is at the surface in the northeast part of the county. It is about 2 miles wide near the northeast corner and extends about 4 miles westward. At the west end, near Mathiston, the area is about one-half mile wide. The Porters Creek Formation consists of clay, sand, silt, clay shale, and siderite.

The Wilcox Group consists of the Ackerman Formation and the Holly Springs Formation.

The Ackerman Formation makes up most of the county on the east side of Highway 15, roughly one-fourth of the county. The area is irregular in shape. It extends eastward into Oktibbeha County and southward into Winston County. Near Choctaw Lake, the area is about 2 1/2 miles wide. The Ackerman Formation consists of sand, sandstone, clay shale, clay, silt, lignite, and iron ore. The city of Ackerman, for which the formation is named, is about 1 mile west of the area.

The Holly Springs Formation is at the surface in the western, central, and southern parts of the county and takes up most of the area of the county. It consists of sand, sandstone, clay shale, clay, silt, lignite, silty limonite, and siderite.

The Tallahatta Formation of the Claiborne Group has three parts in Choctaw County: the Meridian Member, the Basic Member, and the Neshoba Member. The Meridian Member, which is sand, is exposed in several areas near the Montgomery and Attala County lines and the western end of the Winston County line. The largest area, near the southwest corner of the panhandle, is almost 4 miles wide adjoining Attala County and over 3 miles wide adjoining Winston County. The Basic Member is claystone or siltstone lenses or irregular bodies. It is exposed in two small areas in the western part of the panhandle. The larger area is about 1 mile wide from the Attala County line, and the smaller area is closer. The Neshoba Member, which is sand, consists of one small area in the western part of the panhandle, about one-half mile from the Attala County line.

Topography

Most of Choctaw County is in the North Central Hills physiographic province. The extreme northeastern corner is in the Flatwoods. As a whole, Choctaw County is the highest and most hilly part of Central Mississippi, although it contains a considerable area of stream flats. The surface is what is visible of an unconsolidated terrace cut in all directions and to various depths by running water. It seems a tangle of elevations and depressions, but in fact it is part of the surface of an old plateau that slopes gently southward and westward.

Elevation ranges from 210 feet above mean sea level at a spot about two miles northwest of Little Mountain in Bywy to 630 to 660 feet at Williams Hill and in the southwestern corner of the panhandle.

The topography as a whole has reached maturity in the cycle of erosion; that is, it is characterized by slopes, thoroughly dissected uplands, and relatively wide flats. The most rugged region is the Noxubee Hills in the eastern part of the county, but the Ironstone Hills in the southern part are almost as rugged. Both are dissected cuestas in which the northeast and east slopes are steep and the southwest slopes are more gentle.

Drainage

Choctaw County includes parts of three major drainage basins: the Tombigbee River, the Big Black River, and the Pearl River.

The streams of the southeastern part of the county, east of an irregular north-south divide nearly coincident with Highway 15 and south of the Spring Hill Church Road extending east from Williams Station, are tributaries of branches of the Tombigbee River. The chief of these are Noxubee and Little Noxubee Creeks, Bogue Fallah, and Sand Creek. The northwestern half of the county, northwest of a divide extending from Williams Station southwest almost parallel with Besa Chitto Creek to the Attala County line, is drained by the Big Black system, the largest branches being Pigeonroost, Big Bywy, Little Bywy, McCurtains, and Poplar Creeks. The drainage courses of the southern part of the county and an area in the central part belong to the Pearl River system. The most prominent streams are the Yockanookany River and Besa Chitto, Tibby, Lobutcha, and Tallahaga Creeks.

Each of the larger streams has a number of tributaries, and these in turn have their feeders down to the smallest. The entire pattern is treelike, or dendritic, as is common where a drainage system develops in flat beds. The larger of the streams have low gradient except near their heads and flow sluggishly in wide bottoms. Big Bywy, Middle Bywy, and Besa Chitto Creeks and the Yockanookany River have been canalized to expedite runoff.

Early Agriculture

The Indians in this part of Mississippi cultivated clearings on the uplands. Early European settlers also used these spots to produce food. Corn was one of the first crops. Later a little cotton was grown and a few sheep kept to supply materials for home-spun cloth. Tobacco, vegetables, rice, wheat, and sugar cane were grown haphazardly. By 1840 agriculture was fairly well established in Choctaw County.

Before the Civil War, some large plantations operated in this county, but most of the land has always been farmed in small tracts. Cotton has been a major crop. In 1899, 8,370 bales were produced on 19,798 acres. In 1909, the acreage had increased to 22,932 acres, but the crop was only 6,366 bales. In that year, 26,045 acres was planted to cereals.

The boll weevil appeared in Choctaw County in 1909, and the cotton crop almost failed for several years until methods of control were devised. In 1920, 11,682 acres produced 3,218 bales of cotton. The acreage of cereals also declined with the reduction in the farming population.

Settlement and Population

Choctaw County takes its name from the Choctaw Indians, who originally lived in this area.

When first formed, Choctaw County covered about 1,080 square miles. The first county seat was Greenboro, and the first officials were elected in 1834. The county received its current boundaries in 1875. Ackerman became the county seat in 1922 *(4)*.

The population of Choctaw County (under the current boundaries) reached a peak of 14,357 in 1910 but then decreased sharply. The population was 11,009 in 1950 and 8,938 in 1980.

Landscape

Ernest E. Dorrill III, landscape architect, Soil Conservation Service, helped to prepare this section.

Landscape has three aspects: the ecological, the social, and the visual *(18)*. The ecological aspect is determined by the processes that formed and shaped the land in its entirety. The composition and topography of the soils are basic to this aspect of land. The social aspect is the usefulness of the land for economic and other cultural purposes. The visual aspect is the appearance of the landscape.

A landscape has four elements: landforms, water, vegetation, and structures. These elements and their pattern determine the visual diversity of the landscape *(19)*. A landscape that has measurable slope, height, and shape can be compared with and rated against other landscapes in the same area. In the section "General Soil Map Units," each map unit is rated for its visual diversity and for the degree of contrast that changes in land use would produce.

The visual quality of the landscape is affected by land use, which is influenced by soil characteristics. Visual diversity ratings, therefore, can be used in conservation planning and in establishing a continuity of landscape elements.

The quality of the landscape is a consideration, along with soil capability, in planning land use. Structures, such as roads, highways, and utilities, alter the appearance of the landscape. Some tillage methods increase the hazard of erosion, and erosion can reduce visual quality. Planting row crops on the unsuitable soils and then leaving the soil unprotected over winter can result in the formation of deep rills and gullies. Sand and silt from these eroding soils can clog streams and further reduce the visual quality of the whole landscape.

How This Survey Was Made

This survey was made to provide information about the soils in the survey area. The information includes a description of the soils and their location and a discussion of the suitability, limitations, and management of the soils for specified uses. Soil scientists observed the steepness, length, and shape of slopes; the general pattern of drainage; the kinds of crops and native plants growing on the soils; and the kinds of bedrock. They dug many holes to study the soil profile, which is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biologic activity.

The soils in the survey area occur in an orderly pattern that is related to the geology, the landforms, relief, climate, and the natural vegetation of the area. Each kind of soil is associated with a particular kind of landscape or with a segment of the landscape. By observing the soils in the survey area and relating their position to specific segments of the landscape, a soil scientist develops a concept, or model, of how the soils were formed. Thus, during mapping, this model enables the soil scientist to predict with considerable accuracy the kind of soil at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, acidity, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. The system of taxonomic classification used in the United States is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpreted the data from these analyses and tests as well as the field-observed characteristics and the soil properties in terms of expected behavior of the soils under different uses. Interpretations for all of the soils were field tested through observation of the soils in different uses under different levels of management. Some interpretations are modified to fit local conditions, and new interpretations sometimes are developed to meet local needs. Data were assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management were assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can state with a fairly high degree of probability that a given soil will have a high water table within certain depths in most years, but they cannot assure that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Map Unit Composition

A map unit delineation on a soil map represents an area dominated by one major kind of soil or an area dominated by several kinds of soil. A map unit is identified and named according to the taxonomic classification of the dominant soil or soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural objects. In common with other natural objects, they have a characteristic variability in their properties. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of soils of other taxonomic classes. Consequently, every map unit is made up of the soil or soils for which it is named and some soils that belong to other taxonomic classes. These latter soils are called inclusions or included soils.

Most inclusions have properties and behavioral patterns similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting (similar) inclusions. They may or may not be mentioned in the map unit descriptions. Other inclusions, however, have properties and behavior divergent enough to affect use or require different management. These are contrasting (dissimilar) inclusions. They generally occupy small areas and cannot be shown separately on the soil maps because of the scale used in mapping. The inclusions of contrasting soils are mentioned in the map unit descriptions. A few inclusions may not have been observed, and consequently are not mentioned in the descriptions, especially where the soil pattern was so complex that it was impractical to make enough observations to identify all of the kinds of soils on the landscape.

The presence of inclusions in a map unit in no way diminishes the usefulness or accuracy of the soil data. The objective of soil mapping is not to delineate pure taxonomic classes of soils but rather to separate the landscape into segments that have similar use and management requirements. The delineation of such landscape segments on the map provides sufficient information for the development of resource plans, but onsite investigation is needed to plan for intensive uses in small areas.

General Soil Map Units

The general soil map at the back of this publication shows broad areas that have a distinctive pattern of soils, relief, and drainage. Each map unit on the general soil map is a unique natural landscape. Typically, a map unit consists of one or more major soils and some minor soils. It is named for the major soils. The soils making up one unit can occur in other units but in a different pattern.

The general soil map can be used to compare the suitability of large areas for general land uses. Areas of suitable soils can be identified on the map. Likewise, areas where the soils are not suitable can be identified.

Because of its small scale, the map is not suitable for planning the management of a farm or field or for selecting a site for a road or building or other structure. The soils in any one map unit differ from place to place in slope, depth, drainage, and other characteristics that affect management.

Dominantly nearly level soils that are moderately well drained to poorly drained and are subject to flooding; on flood plains

These soils are on flood plains. The surface layer and subsoil are silty or loamy. This group makes up about 13 percent of the county.

1. Chenneby-Arkabutla-Rosebloom

Nearly level, somewhat poorly drained and poorly drained, silty soils

The characteristic landscape of this unit has very little relief. It is mainly the broad to medium, nearly level, low flood plains along the lower courses of the Big Black River, Tibby and Lobutcha Creeks, and tributaries. These streams are frequently flooded because of beaver activity, and there are occasional timber kills. Depressions, stream channels, and old river runs are common. Slope ranges from 0 to 2 percent.

The main land use is forest of bottom-land hardwoods broken only by logging roads. The scattered structures are visually insignificant. The degree of visual diversity is low. Land use changes will create patterns of moderate contrast.

This map unit makes up about 6 percent of the county. It is about 46 percent Chenneby soils, 28 percent Arkabutla soils, 13 percent Rosebloom soils, and 13 percent minor soils.

The Chenneby soils are slightly higher on the flood plains in most places and mainly are near former stream channels. These soils are somewhat poorly drained. They formed in silty alluvium.

The Arkabutla soils are in intermediate positions on broad flats. These soils are somewhat poorly drained. They formed in silty alluvium.

The Rosebloom soils are in slightly lower positions on the flood plains. These soils are poorly drained. They formed in silty alluvium.

The minor soils are the well drained Cascilla soils and the poorly drained Guyton soils. These soils are all on flood plains.

The soils in this unit are poorly suited to the crops commonly grown in the county. Wetness and flooding are the main limitations. These soils are well suited to grasses and legumes for hay or pasture.

The soils of this map unit are well suited to woodland. Although the use of equipment is limited by wetness and flooding, the problems can be partially avoided by logging during the drier seasons.

Flooding and wetness are severe limitations for urban uses.

The soils in this unit have fair potential for openland wildlife habitat. The Chenneby and Arkabutla soils have good potential for woodland wildlife habitat, and the Rosebloom soils have fair potential. The Chenneby and Arkabutla soils have fair potential for wetland wildlife habitat, and the Rosebloom soils have good potential.

2. Chenneby-Oaklimeter-Arkabutla

Nearly level, somewhat poorly drained and moderately well drained, silty soils

The characteristic landscape of this unit has very little relief. It is nearly level, broad flood plains of larger creeks in the central and northern parts of the county. Streams are perennial and have some degree of meander. Slope ranges from 0 to 2 percent.

Most of this unit is open land of crops or pasture. Small areas of bottom-land hardwoods border streams. Some structures associated with present farming activities are evident. The degree of visual diversity is moderate. Land use changes will create patterns of moderate to low contrast.

This map unit makes up about 6 percent of the county. It is about 54 percent Chenneby soils, 32 percent

Oaklimeter soils, 4 percent Arkabutla soils, and 10 percent minor soils.

Chenneby and Oaklimeter soils are in the slightly higher positions on the flood plains; Arkabutla soils are in the slightly lower positions. Chenneby and Arkabutla soils are somewhat poorly drained, and Oaklimeter soils are moderately well drained. All of these soils formed in silty alluvium.

The minor soils are the well drained Ariel and Cascilla soils and the poorly drained Guyton and Rosebloom soils. These soils are all on flood plains.

The soils in this unit are well suited to the crops commonly grown in the county and to grasses and legumes for hay or pasture. Wetness and flooding are the main limitations.

These soils are well suited to woodland. The use of equipment is limited by flooding and wetness.

Seasonal flooding and wetness are severe limitations for urban uses.

The soils in this unit have good potential for woodland wildlife habitat. The Chenneby soils have fair potential for openland wildlife habitat, and the Oaklimeter and Arkabutla soils have good potential. The Chenneby and Arkabutla soils have fair potential for wetland wildlife habitat, and the Oaklimeter soils have poor potential.

3. Kirkville-Mantachie

Nearly level, moderately well drained and somewhat poorly drained, loamy soils

The characteristic landscape of this unit has very little relief. It is nearly level flood plains of medium width in the central and eastern parts of the county. Slope ranges from 0 to 2 percent.

Most of this unit is used for crops or pasture. Mixed hardwood and pine timber borders the perennial streams. The scattered structures are visually insignificant. The degree of visual diversity is moderate. Land use changes will create patterns of moderate to low contrast.

This map unit makes up about 1 percent of the county. It is about 57 percent Kirkville soils, 25 percent Mantachie soils, and 18 percent minor soils.

The Kirkville soils are in the higher positions on the flood plains. They are moderately well drained. They formed in loamy alluvium.

The Mantachie soils are in the slightly lower positions on the flood plains. They are somewhat poorly drained. They formed in loamy alluvium.

The minor soils are the somewhat poorly drained Chenneby soils and the moderately well drained Oaklimeter soils. These soils are all on flood plains.

The soils in this unit are well suited to the crops commonly grown in the county and to grasses and legumes for hay or pasture. Wetness and occasional flooding are the main limitations.

These soils are well suited to woodland.

Seasonal flooding and wetness are severe limitations for urban uses.

The soils in this unit have good potential for openland and woodland wildlife habitat. The Kirkville soils have poor potential for wetland wildlife habitat, and the Mantachie soils have fair potential.

Dominantly gently sloping to steep soils that are moderately well drained or well drained; on uplands

These soils are on upland ridges and hillsides. The surface layer is loamy or silty, and the subsoil is loamy, silty, or clayey. Some of the soils have a fragipan. This group makes up about 87 percent of the county.

4. Maben-Tippah-Providence

Gently sloping to steep, well drained, loamy soils and gently sloping to moderately steep, moderately well drained, silty soils

The landscape of this unit is characterized by varied relief with gently sloping to sloping ridges of medium width and medium to broad, strongly sloping to steep hillsides. Numerous short drainageways are notched into the side slopes and coalesce into intermittent streams with occasional perennial springs. Slope ranges from 2 to 35 percent.

Land use is mainly woodland containing a mixture of hardwoods and pine with frequent openings of pasture and cropland. Few structures are visible. The degree of visual diversity is moderate. Land use changes will produce moderately low contrast.

This map unit makes up about 13 percent of the county. It is about 62 percent Maben soils, 11 percent Tippah soils, 8 percent Providence soils, and 19 percent minor soils.

The Maben soils are mainly on steeper upland hillsides. These soils are well drained. They formed in deposits of stratified loamy material and shaly clay. Base saturation in the lower part of the soil is more than 35 percent.

The Tippah soils are generally on upland ridges and hillsides. These soils are moderately well drained. They formed in a thin mantle of silty material and the underlying clayey material.

The Providence soils are on upland ridges and hillsides. These soils are moderately well drained. They formed in a thin mantle of silty material and the underlying loamy material. They have a fragipan.

The minor soils are the moderately well drained Ora and Savannah soils, which are on uplands; the moderately well drained Oaklimeter soils, which are on the flood plains; and the well drained Smithdale soils, which are on upland hillsides.

The soils on gently sloping ridges are well suited to the crops commonly grown in the county. The soils on sloping hillsides are moderately suited. The soils on

steep hillsides are poorly suited to crops because of the slope and the erosion hazard.

The Maben soils are moderately suited to pasture grasses and legumes where slope is less than 15 percent and poorly suited where slope is greater than 15 percent. The Tippah soils are well suited to pasture. The Providence soils are well suited to pasture in gently sloping areas and moderately suited in sloping areas.

The soils in this unit are moderately suited to woodland. The Maben soils have moderate limitations on the use of equipment, but this problem can be partially avoided by logging during dry periods.

Because of steepness, wetness, and the shrink-swell potential of the Maben and Tippah soils, most areas of this map unit have moderate or severe limitations for urban uses. However, many small areas within the map unit are suitable for residential, industrial, and commercial uses.

The soils in this unit have good potential for woodland wildlife habitat, but they have poor or very poor potential for wetland wildlife habitat. Potential for openland wildlife habitat is good for the Tippah and Providence soils. Potential of the Maben soils for openland wildlife habitat is good where slope is less than 15 percent but is only fair where slope is more than 15 percent.

6. Maben-Smithdale-Ora

Gently sloping to steep, well drained and moderately well drained, loamy soils

The landscape of this unit is characterized by prominent relief. It is hilly uplands with narrow to medium, gently sloping or sloping ridgetops and long, broad, gently rolling to steep hillsides. The unit is dissected by a network of drainageways that are much branched and form intermittent and perennial streams that are spring fed. Slope ranges from 2 to 35 percent.

Most of this unit is woodland containing a mixture of hardwoods and pine. Some openings on ridgetops have crops or pasture. There are very few structures. The degree of visual diversity is low. Land use changes that create patterns will produce high contrast.

This map unit makes up about 12 percent of the county. It is about 27 percent Maben soils, 25 percent Smithdale soils, 18 percent Ora soils, and 30 percent minor soils.

The Maben soils are mainly on upland hillsides. These soils formed in deposits of stratified loamy material and shaly clay. They are well drained. Base saturation in the lower part of the soil is more than 35 percent.

The Smithdale soils are mainly on upland hillsides. These soils formed in loamy material. They are well drained.

The Ora soils are on upland ridgetops and hillsides. These soils are moderately well drained. They formed in loamy material. They have a fragipan.

The minor soils are the moderately well drained Providence soils, which are on uplands and have a fragipan; the moderately well drained Tippah soils, which are on uplands; and the moderately well drained Oaklimeter soils, which are on flood plains.

The Maben and Ora soils on gently sloping ridges are well suited to the crops commonly grown in the county. In sloping areas, the Maben and Ora soils are moderately suited. On strongly sloping to steep hillsides, Maben, Ora, and Smithdale soils are poorly suited to crops because of slope and the erosion hazard.

The Maben soils are moderately suited to pasture grasses and legumes where slope is less than 8 percent. In steeper areas, Maben soils are poorly suited. Generally, the Smithdale and Ora soils are moderately suited to pasture grasses and legumes. However, on steeper hillsides where slope exceeds 15 percent, these soils are poorly suited.

These soils are moderately suited to woodland. Maben soils have moderate limitations on the use of equipment. The problem can be partially avoided by logging during dry periods. Seedling mortality is moderate on the Maben soils.

Because of steepness, wetness, and shrink-swell potential of the Maben soils, most areas of this unit have moderate or severe limitations for urban uses. However, many small areas within the map unit are suitable for residential, industrial, and commercial uses.

The soils in this unit have good potential for woodland wildlife habitat and poor or very poor potential for wetland wildlife habitat. Potential for openland wildlife habitat is good where slope is less than 15 percent but is only fair on the Maben soils that have slope of more than 15 percent.

7. Sweatman-Providence-Tippah

Gently sloping to steep, well drained, loamy soils and gently sloping to moderately steep, moderately well drained, silty soils

The landscape of this map unit is characterized by varied relief with gently sloping to sloping ridgetops and strongly sloping to steep hillsides. The ridgetops are narrow to medium in width, and the hillsides are medium to broad. Most streams are intermittent and have well defined branching systems. Slope ranges from 2 to 35 percent.

The main land use is woodland containing a mixture of hardwoods and pine. There are occasional openings, which are mostly pasture. Structures are visually insignificant. The degree of visual diversity is moderate, and land use changes that create patterns will produce moderate contrast.

This map unit makes up about 11 percent of the county. It is about 58 percent Sweatman soils, 14 percent Providence soils, 11 percent Tippah soils, and 17 percent minor soils.

The Sweatman soils are on upland ridgetops and hillsides. These soils are well drained. They formed in

stratified shaly clay and loamy sediment. Base saturation in the lower part of the soil is less than 35 percent.

The Providence soils are on upland ridges. These soils are moderately well drained. They formed in a thin mantle of silty material and the underlying loamy material. They have a fragipan.

The Tippah soils are also on upland ridges and hillsides. These soils are moderately well drained. They formed in a thin mantle of silty material and the underlying clayey material.

The minor soils are the moderately well drained Ora soils, which have a fragipan and are on uplands, and the moderately well drained Oaklimeter soils, which are on narrow flood plains.

The Sweatman soils in this map unit are poorly suited to crops. In gently sloping areas, Providence and Tippah soils are well suited to the crops commonly grown in the county; in sloping areas they are moderately suited. Where slope exceeds 8 percent, Providence soils are poorly suited to crops.

Sweatman soils are poorly suited to pasture grasses and legumes because productivity is low. Providence soils are well suited in gently sloping areas but only moderately suited in sloping areas and poorly suited in moderately steep areas. Tippah soils are well suited.

The soils of this unit are moderately suited to woodland. The use of equipment on Sweatman soils is moderately restricted. The problem can be avoided by logging during dry periods.

Because of steepness, wetness, and the high shrink-swell potential of the Sweatman and Tippah soils, most areas of this map unit have moderate or severe limitations for urban uses. However, many small areas within the map unit are suitable for residential, industrial, and commercial uses.

The soils of this unit have good potential for use as habitat for woodland wildlife, but they have poor or very poor potential for use as habitat for wetland wildlife. Where the slope is less than 15 percent, the soils have good potential for use as habitat for openland wildlife. Where the slope is more than 15 percent, the Sweatman soils have only fair potential.

8. Smithdale-Sweatman-Ora

Gently sloping to steep, well drained and moderately well drained, loamy and silty soils

The landscape of this unit is characterized by varied relief with narrow to medium winding ridgetops and broad hillsides. The intermittent and perennial streams are much branched. Slope ranges from 2 to 35 percent.

This unit is woodland containing a mixture of hardwoods and pine. Ridgetops have occasional openings used for crops and pasture and small ponds. Structures are visually insignificant. The degree of visual diversity is moderately low. Land use changes that create patterns will produce moderate contrast.

This map unit makes up about 22 percent of the county. It is 37 percent Smithdale soils, 30 percent Sweatman soils, 19 percent Ora soils, and 14 percent minor soils.

The Smithdale soils are on upland hillsides. These soils are well drained. They formed in loamy material.

The Sweatman soils are on upland ridgetops and hillsides. These soils are well drained. They formed in deposits of stratified shaly clay and loamy sediment. Base saturation in the lower part of the soil is less than 35 percent.

The Ora soils are on upland ridgetops and hillsides. These soils are moderately well drained. They formed in loamy material. They have a fragipan.

The minor soils are the moderately well drained Tippah and Providence soils and the well drained Ruston soils; these soils are on uplands. Also included are the moderately well drained Oaklimeter soils, which are on narrow flood plains.

The Smithdale soils, Sweatman soils, and strongly sloping to moderately steep Providence soils are poorly suited to the crops commonly grown in this county because of slope and the erosion hazard. The Ora soils are well suited in gently sloping areas and suited in sloping areas.

The Smithdale soils are moderately suited to pasture grasses and legumes where slope is less than 15 percent and poorly suited where slope is greater. The Sweatman soils are poorly suited because of limited productivity, and the Ora soils are moderately suited.

The soils in this unit are moderately suited to woodland. Sweatman soils have moderate limitations on the use of equipment, but the problem can be avoided by logging during dry periods.

Most areas of this unit are severely limited for urban uses by steepness. However, many small areas within the map unit are suitable for residential, industrial, and commercial uses.

The soils in this unit have good potential for woodland wildlife habitat and poor or very poor potential for wetland wildlife habitat. Potential for openland wildlife habitat is good where slope is less than 15 percent but is only fair on the Smithdale soils that have slope of more than 15 percent.

9. Ora-Providence-Tippah

Gently sloping to moderately steep, moderately well drained, loamy and silty soils

The landscape of this unit is characterized by moderate relief. There are gently sloping ridges of medium width and sloping to moderately steep hillsides. Streams are mostly intermittent with a moderate degree of meander. Slope ranges from 2 to 15 percent.

Land use is divided between cropland, pasture, and woodland. Residential houses, service areas, and associated structures are common except in the

southern part of the county. The degree of visual diversity is high, and land use changes that create patterns will produce low contrast.

This map unit makes up about 12 percent of the county. It is about 40 percent Ora soils, 27 percent Providence soils, 5 percent Tippah soils, and 28 percent minor soils.

The Ora soils are on upland ridgetops and hillsides. These soils are moderately well drained. They formed in loamy material. They have a fragipan.

The Providence soils are on upland ridges. These soils are moderately well drained. They formed in a thin mantle of silty material and the underlying loamy material. They have a fragipan.

The Tippah soils are on upland ridges and hillsides. These soils are moderately well drained. They formed in a thin mantle of silty material and the underlying clayey material.

The minor soils are the somewhat poorly drained Bude and Stough soils, which are on the broader upland flats near flood plains. Also included are the well drained Ariel soils and moderately well drained Oaklimeter soils; these soils are on the narrow flood plains.

The soils on the gently sloping uplands are well suited to the crops commonly grown in the county. Soils on the sloping uplands are moderately suited to crops. The Ora soils and Providence soils on the steeper hillsides are poorly suited to crops because of slope and the hazard of erosion.

The Ora soils are moderately suited to pasture grasses and legumes. The Providence soils on gently sloping ridges are well suited, but those on the sloping to moderately steep hillsides are only moderately suited. Tippah soils are well suited.

These soils are moderately suited to woodland. Woodland management limitations are slight.

Because of wetness and steepness, this map unit has moderate or severe limitations for urban uses. The Tippah soils also have severe limitations because of high shrink-swell potential.

The soils in this unit have good potential for openland and woodland wildlife habitat. The potential for wetland wildlife habitat is poor or very poor.

Broad Land Use Considerations

The soils in Choctaw County vary widely in their suitability for major land uses.

Approximately 6 percent of the county is used for cultivated crops *(20).* Although some cropland is scattered throughout the county, most is concentrated in three general soil map units on soils that are moderately suited or well suited to crops. These are map units 2, 3, and 9. Map units 2 and 3 are occasionally flooded in winter and spring, and wetness is the major limitation for growing crops. The main limitations of the soils of map unit 9 are slope and the hazard of erosion. However, the gently sloping soils on ridges are well suited to crops, and the sloping soils on ridges are moderately suited.

About 10 percent of the county is in hay and pasture. All of the soils of map units 2 and 3 are well suited to hay and pasture, and the soils of map unit 9 are moderately suited or well suited. The soils of map unit 1 are frequently flooded, but they are also well suited to most grasses and legumes for hay and pasture.

About 73 percent of the county is used for woodland. All of the soils of map units 1, 2, and 3 are well suited to trees. All of the soils of map units 4, 5, 6, 7, 8, and 9 are moderately suited to woodland except the Pits-Udorthents complex, which is poorly suited. Some of the soils have moderate equipment limitations that can be overcome by using special equipment or by logging during dry seasons.

For urban uses, the soils of map unit 9 are less restricted than the other soils. The gently sloping to sloping Ora and Providence soils are moderately limited for urban use by wetness and for streets and roads by low strength. These soils also have a fragipan, and moderately slow permeability severely limits their use for septic tank absorption fields. The Tippah soils in map unit 9 are severely limited by the high shrink-swell potential. Most of these limitations can be partially overcome by special design, use of a larger absorption field, and careful installation. The soils of map units 1, 2, and 3 are severely limited by flooding. Map units 4, 5, 6, 7, and 8 are severely limited, mainly by the slope. However, small tracts on ridges and areas of less sloping included soils are suitable for dwelling and commercial buildings.

Limitations for recreation range from slight to severe, depending on the intensity of the expected use. Map units 1, 2, and 3 are severely limited by flooding. Map units 4, 5, 6, 7, 8, and 9 are hilly, so the suitability for intensive recreation is limited. All of these areas, however, are suitable for extensive forms of recreation, such as hunting, hiking, or horseback riding. Small areas suitable for intensive recreation can often be found within map units that are mostly severely limited. Suitability for wildlife habitat is discussed in the section "Use and Management of the Soils."

Detailed Soil Map Units

The map units on the detailed soil maps at the back of this survey represent the soils in the survey area. The map unit descriptions in this section, along with the soil maps, can be used to determine the suitability and potential of a soil for specific uses. They also can be used to plan the management needed for those uses. More information on each map unit, or soil, is given under "Use and Management of the Soils."

Each map unit on the detailed soil maps represents an area on the landscape and consists of one or more soils for which the unit is named.

A symbol identifying the soil precedes the map unit name in the soil descriptions. Each description includes general facts about the soil and gives the principal hazards and limitations to be considered in planning for specific uses.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer or of the underlying material, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer or of the underlying material. They also can differ in slope, stoniness, salinity, wetness, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Ora loam, 2 to 5 percent slopes, eroded, is one of several phases in the Ora series.

Some map units are made up of two or more major soils. These map units are called soil complexes or soil associations.

A *soil complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the soil maps. The pattern and proportion of the soils are somewhat similar in all areas. Pits-Udorthents complex is an example.

A *soil association* is made up of two or more geographically associated soils that are shown as one unit on the maps. Because of present or anticipated soil uses in the survey area, it was not considered practical or necessary to map the soils separately. The pattern and relative proportion of the soils are somewhat similar. Maben-Providence association, hilly, is an example.

Most map units include small scattered areas of soils other than those for which the map unit is named. Some of these included soils have properties that differ substantially from those of the major soil or soils. Such differences could significantly affect use and management of the soils in the map unit. The included soils are identified in each map unit description. Some small areas of strongly contrasting soils are identified by a special symbol on the soil maps.

This survey includes *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Pits is an example. Miscellaneous areas are shown on the soil maps. Some that are too small to be shown are identified by a special symbol on the soil maps.

Table 4 gives the acreage and proportionate extent of each map unit. Other tables (see "Summary of Tables") give properties of the soils and the limitations, capabilities, and potentials for many uses. The Glossary defines many of the terms used in describing the soils.

Ae—Ariel silt loam, occasionally flooded. This nearly level soil is on broad flood plains. This soil is subject to occasional flooding for brief periods late in winter and early in spring before crops are planted. This soil is well drained and formed in silty alluvium. Slope ranges from 0 to 2 percent.

Typically, the surface layer is dark grayish brown silt loam with brownish mottles; it is about 6 inches thick. The subsoil extends to a depth of 63 inches or more. The upper 31 inches is dark yellowish brown silt loam that has brown mottles, the next 10 inches is silt loam mottled in shades of brown and gray, and the lower part is loam mottled in shades of brown and gray.

This soil is very strongly acid or strongly acid throughout except for the surface layer in areas that have been limed. Permeability is moderate in the upper part of the subsoil and moderately slow in the lower part. Available water capacity is high. Runoff is slow, and the hazard of erosion is slight. The high water table is 2 1/2 to 4 feet below the surface in winter and early in spring. The rooting zone is deep and is easily penetrated by plant roots. The surface layer is friable and can be tilled easily within a wide range in moisture content, but it tends to crust and pack after hard rains.

Included in mapping are small areas of Arkabutla and Oaklimeter soils in lower positions on the flood plains. Also included are small areas of Cascilla soils on flood plains in positions similar to those of the Ariel soil.

Most areas of this soil are used for crops or pasture. A small acreage is in woodland.

This soil is well suited to row crops and small grains. Properly arranging plant rows and constructing field ditches remove excess surface water. Returning crop residue to the soil improves fertility and tilth and reduces crusting. Conservation tillage is beneficial.

This soil is well suited to grasses and legumes for pasture or hay. Overgrazing or grazing when the soil is too wet causes surface compaction and poor tilth. Proper stocking rates, controlled grazing, and weed and brush control are needed.

This soil is well suited to cherrybark oak, eastern cottonwood, water oak, yellow-poplar, sweetgum, and loblolly pine. Most woodland management limitations are only slight. Plant competition is moderate.

This soil is severely limited for urban uses, mainly by flooding and seasonal wetness. Flooding, wetness, and the moderately slow permeability of the lower part of the subsoil severely limit use for septic tank absorption fields.

This soil is in capability subclass IIw and woodland suitability group 1o7.

Ak—Arkabutla silt loam, occasionally flooded. This nearly level soil is on flood plains. This soil is subject to occasional flooding that lasts from a few hours to about 2 or 3 days. The floods come in winter and early spring before crops are planted. This soil is somewhat poorly drained and formed in silty alluvium. Slope ranges from 0 to 2 percent.

Typically, the surface layer is dark brown silt loam with light brownish gray mottles and is about 7 inches thick. The subsoil extends to a depth of 66 inches or more; the upper 7 inches is dark brown silt loam with grayish brown mottles, the next 5 inches is mottled dark brown, grayish brown, and yellowish brown silty clay loam, the next 35 inches is grayish brown silty clay loam with yellowish brown mottles, and the lowermost part is gray silty clay loam with yellowish brown mottles.

This soil is very strongly acid or strongly acid throughout, except for the surface layer in areas that have been limed. Permeability is moderate, and available water capacity is high. Runoff is slow, and the hazard of erosion is slight. The water table is 1 to 1 1/2 feet below the surface during winter and early spring. The rooting zone is deep and is easily penetrated by plant roots. The surface layer is friable and can be tilled easily within a wide range in moisture content, but it usually crusts and packs after hard rains.

Included in mapping are small areas of Chenneby and Mantachie soils, which are in positions similar to that of the Arkabutla soil, and small areas of Kirkville and Oaklimeter soils, which are in slightly higher positions. Also included are some small areas of poorly drained silty soils in low depressions.

Most areas of this soil are used for crops and pasture. The rest is in woodland.

This soil is well suited to row crops and small grains. Properly arranging plant rows and installing field ditches remove excess surface water. Conservation tillage is beneficial. Returning crop residue to the soil improves fertility and tilth and reduces crusting.

This soil is well suited to grasses and legumes for hay or pasture. Overgrazing or grazing when the soil is too wet causes surface compaction. Proper stocking rates, controlled grazing, and weed and brush control are needed.

This soil is well suited to cherrybark oak, eastern cottonwood, green ash, loblolly pine, Nuttall oak, willow oak, American sycamore, sweetgum, and water oak. The erosion hazard during logging operations is slight. Use of equipment for harvest is moderately limited during wet weather. Seedling mortality is slight, and plant competition is moderate.

This soil has severe limitations for urban uses, caused mainly by the flooding and wetness. Low strength severely limits use for local roads and streets. Flooding and wetness also severely limit use of this soil for septic tank absorption fields.

This soil is in capability subclass IIw and in woodland suitability group 1w8.

Ar—Arkabutla silt loam, frequently flooded. This nearly level soil is on flood plains and in drainageways. It is frequently flooded for a few hours to several weeks in winter and during part of the crop season. This soil is somewhat poorly drained and formed in silty alluvium. Slope ranges from 0 to 2 percent.

Typically, the surface layer is dark brown silt loam with light brownish gray mottles; it is about 10 inches thick. The subsoil extends to a depth of 60 inches or more. The upper 5 inches of the subsoil is mottled dark brown, yellowish brown, and light brownish gray silt loam, the next 5 inches is light brownish gray silt loam with brownish yellow and yellowish brown mottles, the next 16 inches is light brownish gray silty clay loam with yellowish brown mottles, and the lowermost part is gray silty clay loam with strong brown mottles.

This soil is very strongly acid or strongly acid throughout, except for the surface layer in areas that have been limed. Permeability is moderate, and the available water capacity is high. Runoff is slow, and the hazard of erosion is slight. The high water table is 1 to 1 1/2 feet below the surface in winter and early in spring.

Included in mapping are small areas of Chenneby and Mantachie soils on flood plains in positions similar to those of the Arkabutla soil and small areas of Kirkville and Oaklimeter soils, which are in slightly higher

positions. Also included are some small areas of poorly drained, silty soils in low depressions.

Most areas of this soil are used for woodland and pasture. A small acreage is in soybeans.

This soil is poorly suited to row crops and small grains because of flooding and wetness.

This soil is well suited to grasses and legumes for hay and pasture if species that are somewhat tolerant of wet conditions are used. Overgrazing or grazing when the soil is too wet causes surface compaction, poor tilth, and plant mortality. Proper stocking rates, controlled grazing, and weed and brush control are needed. Sections of fences are likely to be destroyed during severe floods, and animals may be drowned unless they are removed or have access to higher ground.

This soil is well suited to cherrybark oak, eastern cottonwood, green ash, loblolly pine, Nuttall oak, sweetgum, American sycamore, and water oak. The erosion hazard during logging operations is slight. Use of equipment for harvest is severely limited during wet weather. Seedling mortality and plant competition are moderate.

This soil is severely limited for urban uses and for septic tank absorption fields by flooding and wetness. Local roads and streets are also severely limited by low strength.

This soil is in capability subclass IVw and woodland suitability group 1w9.

Bu—Bude silt loam, 0 to 2 percent slopes. This nearly level soil is on uplands and stream terraces. This soil is somewhat poorly drained and has a fragipan. It formed in a mantle of silty material and the underlying loamy material.

Typically, the surface layer is dark brown silt loam with brown mottles; it is about 4 inches thick. The subsurface layer is silt loam mottled in shades of brown and is about 3 inches thick. The subsoil extends to a depth of 60 inches or more. The upper 6 inches is yellowish brown silt loam mottled in shades of brown, and the next 17 inches is silt loam mottled in shades of brown and gray. Below this, the subsoil is a dense and compact fragipan. The upper 17 inches of the fragipan is mottled gray, strong brown, and yellowish brown silty clay loam. The lower part of the fragipan is silt loam mottled in shades of gray and brown.

This soil is very strongly acid to medium acid throughout, except for the surface layer in areas that have been limed. Permeability is moderate in the upper part of the subsoil and slow in the fragipan. Available water capacity is moderate. Runoff is slow, and the hazard of erosion is slight. The water table is perched above the fragipan at a depth of 1/2 to 1 1/2 feet in wet seasons. The fragipan restricts plant roots and limits the amount of water available to plants. The surface layer is friable and has good tilth and can be tilled within a wide range in moisture content. The surface tends to crust and pack after hard rains.

Included in mapping are small areas of Providence and Tippah soils on slightly higher areas on the uplands and small areas of Guyton soils on low terraces and flood plains.

Most areas of this soil are used for crops or pasture. A small acreage is in woodland.

This soil is well suited to row crops and small grains. Properly arranging plant rows and constructing grassed waterways and surface field ditches remove excess surface water. Conservation tillage is beneficial. Returning crop residue to the soil improves fertility and tilth and reduces crusting.

This soil is moderately suited to grasses and legumes for pasture or hay. Overgrazing or grazing when the soil is too wet, however, causes surface compaction and poor tilth. Proper stocking rates, controlled grazing, and weed and brush control are needed.

This soil is well suited to cherrybark oak, Shumard oak, loblolly pine, yellow-poplar, and sweetgum. The hazard of erosion during logging operations is slight. Use of equipment for harvest is moderately limited during wet weather. Seedling mortality is slight, and plant competition is moderate.

This soil is severely limited for urban uses by seasonal wetness. Streets and roads are also severely limited by low strength. Proper design and careful installation help to offset these limitations. Wetness and the slow permeability in the fragipan severely limit use of this soil for septic tank absorption fields, but these problems can be partly overcome by increasing the size of the absorption field.

This soil is in capability subclass IIw and woodland suitability group 2w8.

Ca—Cascilla silt loam, occasionally flooded. This nearly level soil is on flood plains. This soil is subject to occasional flooding for brief periods late in winter and early in spring before crops are planted. This soil is well drained and formed in silty alluvium. Slope ranges from 0 to 2 percent.

Typically, the surface layer is dark brown silt loam about 8 inches thick. The subsoil extends to a depth of 65 inches or more. The upper 18 inches of the subsoil is dark brown silt loam with yellowish brown mottles, the next 8 inches is silt loam mottled in shades of brown, the next 18 inches is brown silt loam with yellowish brown and light gray mottles, and the lowermost part is yellowish brown silt loam with brown and light gray mottles.

The soil is very strongly acid or strongly acid throughout, except for the surface layer in areas that have been limed. Permeability is moderate, and the available water capacity is high. Runoff is slow, and the hazard of erosion is slight. The water table is more than 6 feet below the surface. The rooting zone is deep and

is easily penetrated by plant roots. The surface layer is friable and is easily kept in good tilth, but it tends to crust.

Included in mapping are small areas of Ariel soils, which are in positions similar to those of the Cascilla soil, and small areas of Arkabutla, Chenneby, Kirkville, and Oaklimeter soils, which are in lower positions on the flood plains.

Most areas of this soil are used for crops or pasture. A small acreage is in woodland.

This soil is well suited to row crops. Properly arranging plant rows and constructing field ditches remove excess surface water. Returning crop residue to the soil improves fertility and tilth and reduces crusting. Conservation tillage is beneficial.

This soil is well suited to grasses and legumes for hay and pasture (fig. 1). Overgrazing or grazing when the soil is too wet causes compaction and poor tilth. Proper stocking rates, controlled grazing, and weed and brush control are needed.

This soil is well suited to cherrybark oak, Nuttall oak, eastern cottonwood, loblolly pine, sweetgum, water oak, and yellow-poplar. Most woodland management limitations are slight. Plant competition is moderate.

This soil is severely limited for urban uses by seasonal wetness and flooding. Local roads and streets are also severely limited by low strength. The flooding severely limits use for septic tank absorption fields.

This soil is in capability subclass IIw and woodland suitability group 1o7.

Ce—Chenneby silt loam, occasionally flooded. This nearly level soil is on flood plains. It may be flooded for a few hours to about 2 or 3 days in winter or early in spring before crops are planted. This soil is somewhat poorly drained. Slope ranges from 0 to 2 percent.

Typically, the surface layer is dark brown silt loam with light brownish gray mottles; it is about 4 inches thick. The next 5 inches is dark brown silt loam with light brownish gray and yellowish brown mottles. The upper 8 inches of the subsoil is dark brown silt loam with light

Figure 1.—Cascilla silt loam, occasionally flooded, is well suited to hay.

brownish gray mottles, the next 13 inches is dark brown silty clay loam with mottles in shades of gray and brown, and the lower 10 inches is dark grayish brown silty clay loam with mottles in shades of brown and gray. The underlying material extends to a depth of 60 inches or more and is gray silty clay loam that has yellowish brown and dark yellowish brown mottles.

This soil is very strongly acid to medium acid throughout. Permeability is moderate in the upper part of the subsoil and moderately rapid in the lower part. Available water capacity is moderate. Runoff is slow, and the hazard of erosion is slight. The high water table is 1 to 2 1/2 feet below the surface in winter and early in spring. The rooting zone is deep and is eaily penetrated by plant roots. The surface layer is friable and can be tilled easily within a wide range in moisture content, but it usually crusts and packs after hard rains.

Included in mapping are small areas of Arkabutla soils, which are in positions similar to those of the Chenneby soil, and small areas of Cascilla, Kirkville, and Oaklimeter soils, which are in higher positions on the flood plains.

Most areas of this soil are used for crops and pasture. The rest is in woodland.

This soil is well suited to row crops and small grains. Properly arranging plant rows and constructing field ditches remove excess surface water. Conservation tillage is beneficial. Returning crop residue to the soil improves fertility and tilth and reduces crusting.

This soil is well suited to grasses and legumes for hay and pasture. Overgrazing or grazing when the soil is too wet causes poor tilth and surface compaction. Proper stocking rates, controlled grazing, and week and brush control are needed.

This soil is well suited to loblolly pine, sweetgum, water oak, American sycamore, and yellow-poplar. The hazard of erosion during logging operations is light. Use of equipment for harvest is moderately limited during wet weather. Seedling mortality is moderate, and plant competition is severe.

This soil is severely limited for urban uses and septic tank absorption fields by flooding and wetness. Local roads and streets are also severely limited by low strength.

This soil is in capability subclass IIw and woodland suitability group 1w8.

Cf—Chenneby silt loam, frequently flooded. This nearly level soil is on flood plains. It may be flooded for a few hours to several weeks in winter and during the crop season. This soil is somewhat poorly drained. Slope ranges from 0 to 2 percent.

Typically, the surface layer is dark brown silt loam with grayish mottles and is about 4 inches thick. The next 5 inches is dark brown silt loam with grayish and brownish mottles. The subsoil extends to a depth of 40 inches or more. The upper 8 inches is dark brown silt loam with mottles in shades of gray and brown, the next 13 inches is dark brown silty clay loam with mottles in shades of gray and brown, and the lower part is dark grayish brown silty clay loam with brownish and grayish mottles. The underlying material extends to a depth of 60 inches or more and is gray silty clay loam with brownish mottles.

This soil ranges from very strongly acid to medium acid throughout. Permeability is moderate in the upper part of the subsoil and moderately rapid in the lower part. Available water capacity is moderate. Runoff is slow, and the hazard of erosion is slight. The high water table is 1 to 2 1/2 feet below the surface in winter and early in spring.

Included with this soil in mapping are small areas of Arkabutla and Urbo soils on flood plains in positions similar to those of the Chenneby soil and small areas of Cascilla and Oaklimeter soils in higher positions near streams.

Most areas of this soil are used for woodland and pasture. A small acreage is in soybeans.

This soil is poorly suited to row crops and small grains because of frequent flooding and wetness.

This soil is well suited to grasses and legumes for hay and pasture if species that are somewhat tolerant of wet conditions are used. Overgrazing or grazing when the soil is too wet causes surface compaction and poor tilth. Proper stocking rates, controlled grazing, and weed and brush control are needed. Sections of fences may be destroyed during severe floods, and animals may be drowned unless they are removed or have access to higher ground.

This soil is well suited to loblolly pine, sweetgum, water oak, American sycamore, and yellow-poplar. The hazard of erosion during logging operations is slight. Use of equipment for harvest is moderately limited during wet weather. Seedling mortality is moderate, and plant competition is severe.

This soil is severely limited for urban uses and for septic tank absorption fields by flooding and wetness. Local roads and streets are also severely limited by low strength.

This soil is in capability subclass IVw and woodland suitability group 1w8.

CH—Chenneby-Arkabutla association, frequently flooded. These nearly level soils are in large wooded areas on the flood plains of the Big Black River and some of its larger tributaries. These soils are frequently flooded for a few hours to several weeks in winter and during the crop season. Slope ranges from 0 to 2 percent.

The Chenneby soils make up about 50 percent of this association, the Arkabutla soils make up about 37 percent, and minor soils make up about 13 percent. The major soils occur in a regularly repeating pattern. The Chenneby soils are in bands adjacent to former stream channels, and the Arkabutla soils are on broad flats. Chenneby and Arkabutla soils are somewhat poorly

drained. Mapped areas are mostly long and are medium in width, and they range from 100 to 700 acres in size.

The Chenneby soils typically have a surface layer of dark yellowish brown silt loam about 7 inches thick. The next 6 inches is dark brown silt loam. The upper 8 inches of the subsoil is dark brown silt loam with light brownish gray and dark yellowish brown mottles, the next 15 inches is dark brown silty clay loam with grayish mottles, and the lower part of the subsoil, to a depth of 60 inches or more, is gray silty clay loam with mottles in shades of brown.

The Chenneby soils are very strongly acid or strongly acid. Permeability is moderate in the upper part of the subsoil and moderately rapid in the lower part. Available water capacity is moderate. Runoff is slow, and the hazard of erosion is slight. The high water table is 1 to 2 1/2 feet below the surface in winter and early in spring.

The Arkabutla soils typically have a surface layer of dark brown silt loam with grayish mottles; it is about 6 inches thick. The subsoil extends to a depth of 60 inches or more. The upper 10 inches is mottled dark brown and gray silty clay loam, the next 11 inches is grayish brown silty clay loam with dark brown mottles, and the lower part is gray silty clay loam with yellowish brown mottles.

The Arkabutla soils are very strongly acid or strongly acid. Permeability is moderate, and available water capacity is high. Runoff is slow, and the hazard of erosion is slight. The high water table is 1 to 1 1/2 feet below the surface in winter and early in spring.

This association includes a few small areas of Cascilla, Guyton, Kirkville, Mantachie, and Rosebloom soils. These soils are also on flood plains.

Practically all areas of this association are in hardwood forest.

The soils are poorly suited to row crops and small grains because of the frequent flooding and wetness during the growing season.

These Chenneby and Arkabutla soils are moderately suited to grasses and legumes for hay and pasture if species that are tolerant of wet conditions are grown. Overgrazing or grazing when the soil is too wet causes surface compaction and poor tilth. Proper stocking rates, controlled grazing, and weed and brush control are needed.

The Chenneby soils are well suited to loblolly pine, sweetgum, water oak, yellow-poplar, and American sycamore. The hazard of erosion during logging operations is slight. Use of equipment for harvest is moderately limited during wet weather. Seedling mortality is moderate, and plant competition is severe.

The Arkabutla soil is well suited to cherrybark oak, eastern cottonwood, sweetgum, green ash, loblolly pine, Nuttall oak, American sycamore, and water oak. The hazard of erosion during logging operations is slight. Use of equipment for harvest is severely limited during wet weather. Seedling mortality and plant competition are moderate.

Chenneby and Arkabutla soils are severely limited for urban uses and for septic tank absorption fields by wetness and flooding. Local roads and streets are also severely limited by low strength.

The soils of this association are in capability subclass IVw. The Chenneby soils are in woodland suitability group 1w8, and the Arkabutla soils are in woodland suitability group 1w9.

Gu—Guyton silt loam, occasionally flooded. This level soil is on flood plains and low terraces. This soil is subject to occasional flooding for brief periods in winter and early in spring before crops are planted. This soil is poorly drained and formed in silty material. Slope ranges from 0 to 1 percent.

Typically, the surface layer is dark brown silt loam with grayish brown mottles and is about 6 inches thick. The subsurface layer is gray silt loam with yellowish brown mottles; it is about 11 inches thick. The upper 13 inches of the subsoil is gray silty clay loam with strong brown and yellowish brown mottles, and the lower part, to a depth of 77 inches or more, is grayish brown silty clay loam mottled in shades of brown.

This soil ranges from very strongly acid to medium acid, except for the surface layer in areas that have been limed. Permeability is slow, and available water capacity is high. Runoff is very slow, and the hazard of erosion is slight. A high water table fluctuates between the surface and a depth of 1 1/2 feet in winter and early in spring. The upper part of the subsoil is waterlogged and poorly aerated for long periods.

Included in mapping are small areas of Arkabutla, Mantachie, and Oaklimeter soils, which are on flood plains. Also included are small areas of Bude soils on stream terraces and Ozan soils on stream terraces and flood plains.

Most areas of this soil are used for woodland. A small acreage is in row crops or pasture.

This soil is poorly suited to row crops and small grains because of wetness and flooding.

This soil is moderately suited to grasses and legumes for hay and pasture. Overgrazing or grazing when the soil is too wet causes poor tilth and surface compaction. Proper stocking rates, controlled grazing, and weed and brush control are needed.

This soil is well suited to loblolly pine, slash pine, sweetgum, green ash, southern red oak, and water oak. The hazard of erosion during logging operations is slight. Use of equipment for harvest is severely limited during wet weather. Seedling mortality is moderate, and plant competition is severe.

This soil is severely limited for urban uses by flooding and wetness. Streets and roads are also severely limited by low strength. This soil is severely limited for septic tank absorption fields by flooding, wetness, and the slow permeability of the subsoil.

This soil is in capability subclass IVw and woodland suitability group 2w9.

Kk—Kirkville fine sandy loam, occasionally flooded. This nearly level soil is on flood plains. This soil is subject to occasional flooding for brief periods of a few hours to 2 or 3 days in winter and early in spring before crops are planted. This soil is moderately well drained and formed in loamy alluvium. Slope ranges from 0 to 2 percent.

Typically, the surface layer is dark brown fine sandy loam about 7 inches thick. The subsurface layer is dark brown fine sandy loam with pale brown mottles; it is about 6 inches thick. The upper 11 inches of the subsoil is dark brown loam with grayish brown and yellowish red mottles, the next 19 inches is mottled yellowish brown, light brownish gray, and strong brown sandy loam, and the lower 11 inches is grayish brown sandy loam with mottles in shades of brown. The underlying material, which extends to a depth of 65 inches or more, is gray sandy loam with brownish mottles.

This soil is very strongly acid or strongly acid, except for the surface layer in areas that have been limed. Permeability is moderate, and available water capacity is moderate. Runoff is slow, and the hazard of erosion is slight. The water table fluctuates between depths of 1 1/2 and 2 1/2 feet in winter and early in spring. The rooting zone is deep and is easily penetrated by plant roots. The surface layer is friable and can be tilled easily within a wide range in moisture content.

Included in mapping are small areas of Arkabutla and Mantachie soils in lower positions and small areas of Cascilla soils in higher positions. Also included are small areas of Oaklimeter soils, which are in positions on the flood plains similar to those of the Kirkville soil.

Most areas of this soil are used for crops and pasture. A small acreage is in woodland.

This soil is well suited to row crops and small grains. Properly arranging plant rows and constructing field ditches remove excess surface water. Conservation tillage is beneficial. Returning crop residue to the soil reduces surface crusting and improves fertility and tilth.

This soil is well suited to grasses and legumes for hay and pasture. Overgrazing or grazing when the soil is too wet causes poor tilth and surface compaction. Proper stocking rates, controlled grazing, and weed and brush control are needed.

This soil is well suited to cherrybark oak, eastern cottonwood, loblolly pine, water oak, sweetgum, and yellow-poplar. The hazard of erosion during logging operations is slight. Use of equipment for harvest is moderately limited during wet weather. Seedling mortality and plant competition are moderate.

Flooding and wetness severely limit use of this soil for urban uses and for septic tank absorption fields.

This soil is in capability subclass IIw and woodland suitability group 1w8.

Kr—Kirkville fine sandy loam, frequently flooded. This nearly level soil is on flood plains and in drainageways. The soil is flooded frequently for a few hours to several days during winter and during the crop season. This soil is moderately well drained and formed in loamy alluvium. Slope ranges from 0 to 2 percent.

Typically, the surface layer is dark brown fine sandy loam with grayish brown mottles and is about 5 inches thick. The next 4 inches is loam with pale brown mottles. The upper 11 inches of the subsoil is dark brown loam with grayish brown mottles, the next 10 inches is dark yellowish brown loam with mottles in shades of gray and brown, and the lower part, which extends to a depth of 60 inches or more, is gray sandy loam with mottles in shades of brown.

This soil is very strongly acid or strongly acid throughout except for the surface layer in areas that have been limed. Permeability is moderate, and available water capacity is moderate. The water table fluctuates between depths of 1 1/2 and 2 1/2 feet in winter and during wet seasons. Runoff is slow, and the hazard of erosion is slight.

Included in mapping are small areas of Ariel and Cascilla soils in higher positions on the flood plains and small areas of Arkabutla, Chenneby, and Mantachie soils in lower positions. Also included are small areas of Oaklimeter soils, which are in positions on the flood plains similar to those of the Kirkville soil.

Most areas of this soil are used for woodland and pasture. A small acreage is in soybeans.

These soils are poorly suited to row crops and small grains because of flooding.

This soil is moderately suited to grasses and legumes for hay and pasture if species that are tolerant of wet conditions are used. Overgrazing or grazing when the soil is too wet causes surface compaction and poor tilth. Proper stocking rates, controlled grazing, surface field ditches, and weed and brush control are needed. Sections of fences are likely to be destroyed during severe flooding, and animals may be drowned unless they are removed or have access to higher ground.

This soil is well suited to cherrybark oak, water oak, eastern cottonwood, yellow-poplar, loblolly pine, and sweetgum. The hazard of erosion during logging operations is slight. Plant competition is moderate, and seedling mortality is severe. Use of equipment for harvest is severely limited during wet weather.

This soil is severely limited for urban uses and for septic tank absorption fields by flooding and wetness.

This soil is in capability subclass Vw and woodland suitability group 1w9.

MaB—Maben silt loam, 2 to 5 percent slopes. This gently sloping soil is on ridgetops. This soil is well drained.

Typically, the surface layer is dark brown silt loam about 5 inches thick. The subsoil extends to a depth of

35 inches or more. The upper 10 inches is reddish brown silty clay, the next 7 inches is reddish brown silty clay with strong brown mottles, and the lower 13 inches is yellowish red silty clay with strong brown mottles. The underlying material extends to a depth of 67 inches or more. It is stratified layers of grayish partially weathered shale and brownish yellow and yellowish brown fine sandy loam.

The soil ranges from very strongly acid to slightly acid, except for the surface layer in areas that have been limed. Permeability is moderately slow, and available water capacity is high. Runoff is medium, and the hazard of erosion is moderate. The water table is below a depth of 6 feet. The rooting zone is moderately deep and is easily penetrated by plant roots. The surface layer is friable and can be tilled easily within a wide range in moisture content, but it usually crusts and packs after hard rains.

Included in mapping are small areas of Providence and Tippah soils on upland ridges and hillsides and small areas of Smithdale soils on upland hillsides. Also included are a few small areas on uplands of soils that have a fine sandy loam or loam surface layer.

Most areas of this soil are used for pasture or row crops. Some areas are in woodland.

The soil is well suited to row crops and small grains. Crop rotation, conservation tillage, contour farming, terraces, and grassed waterways reduce erosion on cultivated fields. Returning crop residue to the soil improves fertility and tilth and reduces crusting.

This soil is moderately suited to grasses and legumes for hay and pasture. Proper stocking rates, controlled grazing, and weed and brush control are needed.

This soil is moderately suited to loblolly pine and shortleaf pine. The hazard of erosion during logging operations is slight. Use of equipment for harvest is moderately limited during wet weather. Seedling mortality is moderate, and plant competition is slight.

This soil is severely limited for most urban uses by shrinking and swelling with changes in moisture content. Special design and careful installation are required. Local roads and streets are also severely limited by low strength. The moderately slow permeability of the clayey subsoil severely limits use for septic tank absorption fields. This problem can be partially overcome by enlarging the field.

This soil is in capability subclass IIe and woodland suitability group 3c2.

MaC—Maben silt loam, 5 to 8 percent slopes. This sloping soil is on ridgetops and upper side slopes. This soil is well drained.

Typically, the surface layer is dark brown silt loam with dark yellowish brown mottles and is about 4 inches thick. The upper 12 inches of the subsoil is yellowish red silty clay, the next 12 inches is yellowish red silty clay with pale brown and strong brown mottles, and the lower 12 inches is red loam with strong brown mottles and gray partially weathered shale fragments. The underlying material extends to a depth of 60 inches or more. It is stratified layers of yellowish red and yellowish brown fine sandy loam and gray shale.

The soil ranges from very strongly acid to slightly acid throughout, except for the surface layer in areas that have been limed. Permeability is moderately slow, and the available water capacity is high. Runoff is rapid, and the hazard of erosion is severe. The high water table is below a depth of 6 feet. The rooting zone is moderately deep and is easily penetrated by plant roots. The surface layer is friable and can be tilled easily within a wide range in moisture content, but it usually crusts and packs after hard rains.

Included in mapping are a few small eroded areas, small areas of Providence and Tippah soils on upland ridges and hillsides, and small areas of Smithdale soils on upland hillsides. Also included are a few small areas on uplands of Maben soils that have a fine sandy loam or loam surface layer.

Most areas of this soil are used for pasture or row crops. The rest are in woodland.

This soil is moderately suited to commonly grown row crops and small grains. The hazard of erosion is a limitation. Crop rotation, conservation tillage, contour stripcropping, contour farming, terraces, and grassed waterways reduce erosion on cultivated fields. Returning crop residue to the soil improves fertility and tilth and reduces crusting.

This soil is moderately suited to grasses and legumes for hay and pasture. Proper stocking rates, controlled grazing, and weed and brush control are needed.

This soil is moderately suited to loblolly pine and shortleaf pine. The hazard of erosion during logging operations is slight. Use of equipment for harvest is moderately limited during wet weather. Seedling mortality is moderate, and plant competition is slight.

This soil is severely limited for most urban uses by shrinking and swelling. Special design and careful installation are required. Local roads and streets are also severely limited by low strength. The moderately slow permeability of the clayey subsoil severely limits use for septic tank absorption fields. This problem can be partially overcome by enlarging the absorption field.

This soil is in capability subclass IIIe and woodland suitability group 3c2.

MaE—Maben fine sandy loam, 8 to 15 percent slopes. This strongly sloping or moderately steep soil is on side slopes of uplands. This soil is well drained.

Typically, the surface layer is brown fine sandy loam about 4 inches thick. The upper 10 inches of the subsoil is yellowish red clay, and the lower 7 inches is yellowish red clay with grayish brown shale fragments. The upper 14 inches of the underlying material is stratified layers of yellowish red fine sandy loam and grayish brown partially

weathered shale. Below this to a depth of 70 inches or more, the underlying material is stratified layers of gray partially weathered shale and brownish yellow and strong brown fine sandy loam.

This soil is very strongly acid to slightly acid except for the surface layer in areas that have been limed. Permeability is moderately slow, and available water capacity is high. Runoff is rapid, and the hazard of erosion is severe unless plant cover is maintained. The high water table is below a depth of 6 feet.

Included in mapping are small areas of Providence and Tippah soils on upland ridges and hillsides and small areas of Smithdale soils on upland hillsides. Also included are a few small areas of soils that have a silt loam or loam surface layer.

Most areas of this soil are used for woodland. A small acreage is in pasture.

This soil is poorly suited to row crops, small grains, hay, and pasture. Steepness and the hazard of erosion are severe limitations for row crops. Forage production is low but possible. If grasses and legumes are grown for hay or pasture, proper stocking rates, controlled grazing, and weed and brush control are needed.

This soil is moderately suited to loblolly pine and shortleaf pine. The hazard of erosion during logging operations is slight. Use of equipment for harvest is moderately limited during wet weather. Seedling mortality is moderate, and plant competition is slight.

This soil is severely limited for most urban uses by shrinking and swelling and by steepness. Special design and careful installation are required. Local roads and streets are also severely limited by low strength. The moderately slow permeability of the clayey subsoil severely limits use for septic tank absorption fields. This problem can be partially overcome by enlarging the absorption field.

This soil is in capability subclass VIe and woodland suitability group 3c2.

MP—Maben-Providence association, hilly. These soils are on rough uplands. The landscape is a mass of moderately steep and steep hills with narrow, winding ridgetops and narrow drainageways. Slope ranges from 12 to 35 percent.

The Maben soils make up about 71 percent of this association, the Providence soils and similar soils make up 24 percent, and minor soils make up 5 percent. The major soils occur in a regularly repeating pattern. The Maben soils are mainly on the steep hillsides. The Providence soils are mainly on the narrow ridgetops, but in some places are on the upper parts of less sloping hillsides. The Maben soils are well drained and formed in stratified clayey and loamy materials that overlie shale. The Providence soils is moderately well drained and formed in a thin mantle of silty material and the underlying loamy material. Mapped areas range from 160 acres to several hundred acres in size.

The Maben soils typically have a surface layer of dark brown fine sandy loam about 4 inches thick. The subsoil is yellowish red silty clay to a depth of about 24 inches. The upper 21 inches of the underlying material is mottled yellowish red and strong brown silty clay loam and partially weathered gray shale fragments. Below this to a depth of 60 inches or more, the underlying material is stratified strong brown silty clay loam, fine sandy loam, and partially weathered gray shale.

The Maben soils range from very strongly acid to slightly acid throughout, except for the surface layer in areas that have been limed. Permeability is moderately slow, and available water capacity is high. Runoff is rapid. The hazard of erosion is severe, and a plant cover should be maintained. The high water table is below a depth of 6 feet.

The Providence soils typically have a surface layer of dark grayish brown silt loam about 2 inches thick. The subsurface layer is yellowish brown silt loam about 4 inches thick. The upper 10 inches of the subsoil is yellowish red silt loam, and the next 10 inches is yellowish red silty clay loam with mottles in shades of brown. The lower part of the subsoil is a dense and compact fragipan that extends to a depth of 60 inches or more. The upper 5 inches of the fragipan is yellowish red silty clay loam with mottles in shades of brown and gray, the next 17 inches is yellowish red sandy clay loam with light grayish brown and yellowish brown mottles, and the lower part of the fragipan is mottled red, yellowish brown, pale brown, and gray sandy clay loam.

Providence soils are very strongly acid to medium acid. Permeability is moderate in the upper part of the subsoil and moderately slow in the fragipan. Available water capacity is moderate. Runoff is rapid, and the hazard of erosion is severe unless a plant cover is maintained. A high water table is perched above the fragipan at a depth of 1 1/2 to 3 feet in winter and early in spring.

This association includes a few small areas of Smithdale soils on upper parts of hillsides, a few small areas of Ora and Tippah soils on narrow ridgetops, and small areas of Oaklimeter and Guyton soils in narrow drainageways.

Most areas of this association are used for woodland. A small acreage is in pasture.

The soils are poorly suited to pasture, row crops, and small grains because of steepness and the erosion hazard.

The Maben soils are moderately suited to loblolly pine and shortleaf pine. The hazard of erosion during logging operations is slight. Use of equipment for harvest is moderately limited during wet weather. Seedling mortality is moderate, and plant competition is slight.

The Providence soils are moderately suited to loblolly pine, shortleaf pine, Shumard oak, sweetgum, and yellow-poplar. Woodland management limitations are slight.

These soils are severely limited for urban uses by steepness and shrinking and swelling. Local roads and streets are also severely limited by low strength. Special design and careful installation are required. The moderately slow permeability of the clayey subsoil of the Maben soils and the fragipan of the Providence soils limits use for septic tank absorption fields. This problem can be partially overcome by enlarging the field. Steepness also severely limits use of the Maben soils for septic tank absorption fields. This problem can be partially overcome by installing the lines on the contour.

The Maben soils are in capability subclass VIIe, and the Providence soils are in capability subclass VIe. The Maben soils are in woodland suitability group 3c2, and the Providence soils are in woodland suitability group 3o7.

Mt—Mantachie loam, occasionally flooded. This nearly level soil is on flood plains. This soil is subject to occasional flooding for brief periods late in winter and early in spring before crops are planted. This soil is somewhat poorly drained and formed in loamy alluvium. Slope ranges from 0 to 2 percent.

Typically, the surface layer is dark brown loam with grayish brown mottles and is about 7 inches thick. The subsoil extends to a depth of 60 inches or more. The upper 4 inches is mottled dark brown, grayish brown, and light olive brown loam; the next 7 inches is mottled grayish brown, dark yellowish brown, and yellowish brown loam; the next 17 inches is grayish brown loam with dark yellowish brown and yellowish brown mottles; the next 10 inches is gray loam with dark yellowish brown and yellowish brown mottles; and the lowermost part is mottled gray, dark yellowish brown, yellowish brown, and dark brown sandy loam.

This soil is very strongly acid or strongly acid, except for the surface layer in areas that have been limed. Permeability is moderate, and available water capacity is high. Runoff is slow, and the hazard of erosion is slight. The seasonal high water table is within 1 to 1 1/2 feet of the surface in winter and early in spring. The rooting zone is deep and is easily penetrated by plant roots. The surface layer is friable and can be tilled easily within a wide range in moisture content, but it usually crusts and packs after hard rains.

Included in mapping are small areas of Arkabutla and Chenneby soils on flood plains in positions similar to those of the Mantachie soil, small areas of Kirkville and Oaklimeter soils in slightly higher positions, and some small areas of poorly drained, loamy soils in low depressions.

Most areas of this soil are used for crops and pasture. A small acreage is in woodland.

This soil is well suited to row crops and small grains. Occasional flooding causes slight to moderate crop damage. Properly arranging plant rows and constructing field ditches remove excess surface water. Conservation tillage is beneficial. Returning crop residue to the soil improves fertility and tilth and reduces crusting.

This soil is well suited to grasses and legumes for pasture and hay. Overgrazing or grazing when the soil is too wet causes surface compaction and poor tilth. Proper stocking rates, controlled grazing, and weed and brush control are needed.

This soil is well suited to green ash, cherrybark oak, eastern cottonwood, loblolly pine, yellow-poplar, and sweetgum. The hazard of erosion during logging operations is slight. Use of equipment for harvest is severely limited during wet weather. Seedling mortality is moderate, and plant competition is severe.

This soil is severely limited for urban uses and for septic tank absorption fields by flooding and wetness.

This soil is in capability subclass IIw and woodland suitability group 1w8.

Mv—Mantachie loam, frequently flooded. This nearly level soil is on flood plains. This soil is frequently flooded for brief periods in winter and spring and during the crop season. This soil is somewhat poorly drained and formed in loamy alluvium. Slope ranges from 0 to 2 percent.

Typically, the surface layer is brown loam with grayish brown mottles about 5 inches thick. The subsurface layer is mottled grayish brown, brown, and yellowish brown loam about 4 inches thick. The subsoil extends to a depth of 60 inches or more. The upper 10 inches is mottled brown, grayish brown, and dark yellowish brown loam, the next 10 inches is gray loam with yellowish brown mottles, the next 16 inches is grayish loam with yellowish brown mottles, and the lowermost part is grayish clay loam with mottles in shades of brown.

This soil is very strongly acid or strongly acid. Permeability is moderate, and available water capacity is high. Runoff is slow, and the hazard of erosion is slight. The seasonal high water table is within 1 to 1 1/2 feet of the surface in winter and early in spring.

Included in mapping are small areas of Arkabutla and Chenneby soils in positions similar to those of the Mantachie soil, small areas of Kirkville and Oaklimeter soils in slightly higher positions on the flood plains, and some small areas of poorly drained, loamy soils in low depressions.

Most areas of this soil are used for woodland and pasture. A small acreage is in soybeans.

This soil is poorly suited to row crops and small grains because of flooding and wetness.

This soil is moderately suited to grasses and legumes for hay and pasture if species that are tolerant of wet conditions are used. Overgrazing or grazing when the soil is too wet causes surface compaction and poor tilth. Proper stocking rates, controlled grazing, and weed and brush control are needed. Sections of fences are likely to be destroyed during severe flooding, and animals may

be drowned unless they are removed or have access to higher ground.

This soil is well suited to cherrybark oak, eastern cottonwood, green ash, loblolly pine, yellow-poplar, and sweetgum. The hazard of erosion during logging operations is slight. Use of equipment for harvest is severely limited during wet weather. Plant competition and seedling mortality are severe.

This mapping unit is severely limited for urban uses and for septic tank absorption fields by flooding and wetness.

This soil is in capability subclass Vw and woodland suitability group 1w9.

Oa—Oaklimeter silt loam, occasionally flooded. This nearly level soil is on broad flood plains. This soil is subject to occasional flooding for a few hours to about 1 to 2 days in winter and early in spring before crops are planted. This soil is moderately well drained and formed in silty alluvium. Slope ranges from 0 to 2 percent.

Typically, the surface layer is dark brown silt loam about 7 inches thick. The subsoil extends to a depth of about 60 inches or more. The upper 9 inches is dark brown silt loam that has brownish mottles, the next 7 inches is dark brown silt loam that has grayish mottles, and the lower part is silt loam that is mottled in shades of brown and gray.

This soil is very strongly acid or strongly acid throughout. Permeability is moderate. Available water capacity is high. Runoff is slow, and the hazard of erosion is slight. The high water table is 1 1/2 to 2 1/2 feet below the surface in winter and early in spring. The rooting zone is deep and is easily penetrated by plant roots. The surface layer is friable and can be tilled easily within a wide range in moisture content, but it tends to crust and pack after hard rains.

Included in mapping are small areas of Ariel soils in higher positions on the flood plains and small areas of Arkabutla, Chenneby, and Mantachie soils in lower positions. Also included are a few small areas of a silty soil in lower positions on the flood plains.

Most areas of this soil are used for crops and pasture. A small acreage is in woodland.

This soil is well suited to row crops and small grains. Properly arranging plant rows and constructing field ditches remove excess surface water. Conservation tillage is beneficial. Returning crop residue to the soil improves fertility and tilth and reduces crusting.

This soil is well suited to grasses and legumes for hay or pasture. Overgrazing or grazing when the soil is too wet causes poor tilth and surface compaction. Proper stocking rates, controlled grazing, and weed and brush control are needed.

This soil is well suited to cherrybark oak, eastern cottonwood, green ash, loblolly pine, Nuttall oak, willow oak, water oak, sweetgum, and yellow-poplar. Most woodland management limitations are slight. Plant competition is moderate.

This soil is severely limited for urban uses and for septic tank absorption fields by wetness and flooding.

This soil is in capability subclass IIw and woodland suitability group 1o7.

OrB2—Ora loam, 2 to 5 percent slopes, eroded. This gently sloping soil is on ridgetops on the uplands. This soil is deep and moderately well drained. It has a fragipan.

Typically, the surface layer is yellowish brown loam about 6 inches thick. The subsoil extends to a depth of 60 inches or more. The upper 20 inches is yellowish red clay loam, and the lower part is a brittle and compact fragipan of sandy clay loam mottled in shades of red, brown, and gray.

In most areas of this eroded soil, part of the original surface layer has been removed by erosion, and tillage has mixed the remaining topsoil with material from the subsoil. In some small areas all of the plow layer is original topsoil, and in other areas the plow layer is mainly subsoil material. Some areas have a few rills and shallow gullies.

This soil is very strongly acid or strongly acid throughout, except for the surface layer in areas that have been limed. Permeability is moderate in the upper part of the subsoil and moderately slow in the fragipan. A water table is perched above the fragipan and fluctuates between depths of 2 and 3 1/2 feet during wet seasons. Available water capacity is moderate. Runoff is slow to medium, and the hazard of erosion is slight to moderate. Rooting depth and the movement of air and water through the soil are restricted by the fragipan. The surface layer is friable and can be tilled easily within a fairly wide range in moisture content, but it usually crusts and packs after hard rains.

Included in mapping are small areas of Providence, Ruston, and Tippah soils on upland ridges and hillsides. Also included are small upland areas where slope is more than 5 percent.

Most areas of this soil are used for pasture or row crops. Some areas are in woodland.

This soil is well suited to row crops and small grains. Returning crop residue to the soil improves fertility and tilth and reduces crusting. Conservation tillage, crop rotation, contour farming, terraces, and grassed waterways reduce erosion on cultivated fields.

This soil is moderately suited to grasses and legumes for hay and pasture. Proper stocking rates, controlled grazing, and weed and brush control are needed.

This soil is moderately suited to loblolly pine, slash pine, shortleaf pine, and sweetgum. Most woodland management limitations are slight. Plant competition is moderate.

This soil is moderately suited to most urban uses, being limited by the seasonal high water table. Local

roads and streets are also limited by low strength. This soil is severely limited for septic tank absorption fields by wetness and the moderately slow permeability of the fragipan. These problems can be partially overcome by lengthening the lines.

This soil is in capability subclass IIe and woodland suitability group 3o7.

OrC2—Ora loam, 5 to 8 percent slopes, eroded. This sloping soil is on ridgetops on the uplands. This soil is deep and moderately well drained. It has a fragipan.

Typically, the surface layer is dark brown loam about 5 inches thick. The subsurface layer is strong brown loam about 4 inches thick. The upper 13 inches of the subsoil is yellowish red sandy clay loam; it has brownish mottles below a depth of about 18 inches. The next 28 inches is a dense and compact fragipan of sandy clay loam mottled in shades of red, brown, and gray grading to loam below a depth of 38 inches. The underlying material extends to a depth of 60 inches or more and is strong brown sandy loam with brownish mottles.

In most areas of this soil, part of the original surface layer has been removed by erosion, and tillage has mixed the remaining topsoil with material from the subsoil. In some small areas all of the plow layer is original topsoil, and in other areas the plow layer is mainly subsoil material. Some areas have a few rills and shallow gullies.

This soil is very strongly acid or strongly acid throughout, except for the surface layer in areas that have been limed. Permeability is moderate in the upper part of the subsoil and moderately slow in the fragipan. A water table is perched above the fragipan and fluctuates between depths of 2 and 3 1/2 feet during wet seasons. Available water capacity is moderate. Runoff is medium, and the hazard of erosion is moderate. Rooting depth and the movement of air and water through the soil are restricted by the fragipan. The surface layer is friable and can be tilled easily within a wide range in moisture content, but it usually crusts and packs after hard rains.

Included in mapping are small areas of Providence, Ruston, and Tippah soils on upland ridges and hillsides and small upland areas that have slope of more than 8 percent.

Most areas of this soil are used for pasture or row crops. Some areas are in woodland.

This soil is moderately suited to row crops and small grains. The hazard of erosion is the main limitation. Crop rotation, conservation tillage, terraces, grassed waterways, and contour farming reduce erosion on cultivated fields. Returning crop residue to the soil improves fertility and tilth and reduces crusting.

This soil is moderately suited to grasses and legumes for hay and pasture. Proper stocking rates, controlled grazing, and weed and brush control are needed.

This soil is moderately suited to loblolly pine, slash pine, shortleaf pine, and sweetgum. Most woodland management limitations are slight. Plant competition is moderate.

This soil is moderately suited to most urban uses, being limited by the seasonal high water table and by steepness. Local roads and streets are also limited by low strength. This soil is severely limited for septic tank absorption fields by wetness and the moderately slow permeability of the fragipan. These problems can be partially overcome by lengthening the lines.

This soil is in capability subclass IIIe and woodland suitability group 3o7.

OrD2—Ora loam, 8 to 12 percent slopes, eroded. This strongly sloping soil is on upland ridges and hillsides. This soil is moderately well drained and has a fragipan.

Typically, the surface layer is dark grayish brown loam about 3 inches thick. The subsurface layer is brown loam to a depth of about 7 inches. The upper 11 inches of the subsoil is yellowish red sandy clay loam. Below this is a brittle and compact fragipan, 34 inches thick, of sandy clay loam mottled in shades of red, brown, and gray. The underlying material, which extends to a depth of 62 inches or more, is red sandy loam that is mottled in shades of brown.

In most areas of this soil, part of the original surface layer has been removed by erosion, and tillage has mixed the remaining topsoil with material from the subsoil. In some small areas all of the plow layer is original topsoil, and in other areas the plow layer is mainly subsoil material. Some areas have a few rills and shallow gullies.

This soil is very strongly acid or strongly acid, except for the surface layer in areas that have been limed. Permeability is moderate in the upper part of the subsoil and moderately slow in the fragipan. A water table is perched above the fragipan and fluctuates between depths of 2 and 3 1/2 feet during wet seasons. Available water capacity is moderate. Runoff is medium to rapid, and the hazard of erosion is severe.

Included in mapping are small areas of Providence and Tippah soils on upland ridges and hillsides and small areas of Smithdale soils on upland hillsides. Small areas that are severely eroded are also included.

Most areas of this soil are used for woodland. The rest is used for crops and pasture.

This soil is poorly suited to row crops and small grains because of steepness and the erosion hazard.

This soil is moderately suited to grasses and legumes for hay and pasture. Proper stocking rates, controlled grazing, and weed and brush control are needed.

This soil is moderately suited to loblolly pine, slash pine, shortleaf pine, and sweetgum. Most woodland management limitations are slight. Plant competition is moderate.

This soil is moderately or severely limited for most urban uses by steepness and wetness. Local roads and streets are also severely limited by low strength. These problems can be overcome by good design and careful installation. This soil is severely limited for septic tank absorption fields by wetness and the moderately slow permeability of the fragipan. These problems can be partially overcome by lengthening the lines.

This soil is in capability subclass IVe and woodland suitability group 3o7.

OrD3—Ora loam, 8 to 12 percent slopes, severely eroded. This strongly sloping soil is on upland side slopes. This soil is moderately well drained and has a fragipan.

Typically, the surface layer is yellowish brown loam with yellowish red fragments of subsoil material and is about 3 inches thick. The subsoil extends to a depth of 62 inches or more. The upper 7 inches is yellowish red clay loam, and the next 7 inches is reddish brown clay loam. The lower part of the subsoil is a brittle and compact fragipan of sandy clay loam mottled in shades of red, brown, and gray.

In most areas of this soil, the original surface layer has been lost through erosion, and the plow layer is subsoil material. In some small areas, the surface layer is a mixture of original topsoil and subsoil material. Rills and shallow gullies are common. A few areas have a few deep gullies, which cannot be crossed by farm machinery.

This soil is very strongly acid or strongly acid, except for the surface layer in areas that have been limed. Permeability is moderate in the upper part of the subsoil and moderately slow in the fragipan. The water table is perched above the fragipan and fluctuates between depths of 2 and 3 1/2 feet during wet seasons. Available water capacity is moderate. Runoff is medium to rapid, and the hazard of erosion is severe.

Included in mapping are small areas of Providence and Tippah soils on upland ridges and hillsides and small areas of Smithdale soils on upland hillsides.

Most areas of this soil are used for woodland.

This soil is poorly suited to row crops and small grains because of steepness and the erosion hazard. This soil should be kept in trees or a permanent cover of grasses and legumes.

These soils are moderately suited to hay and pasture. Gullies should be shaped and smoothed. Proper stocking rates, controlled grazing, and weed and brush control are needed.

This soil is moderately suited to loblolly pine, slash pine, shortleaf pine, and sweetgum. Most woodland management limitations are slight. Plant competition is moderate.

This soil is moderately or severely limited for urban uses by steepness and wetness. Local roads and streets are also moderately limited by low strength. These problems can be overcome by good design and careful installation. This soil is severely limited for septic tank absorption fields by wetness and the moderately slow permeability of the fragipan. These problems can be partially overcome by lengthening the field lines.

This soil is in capability subclass VIe and woodland suitability group 3o7.

Oz—Ozan loam, occasionally flooded. This level soil is on stream terraces. This soil may be occasionally flooded for brief periods in winter and early in spring before crops are planted. This soil is poorly drained and formed in loamy material. Slope ranges from 0 to 1 percent.

Typically, the surface layer is grayish brown loam with light brownish gray mottles and is about 5 inches thick. The subsurface layer is light gray fine sandy loam with yellowish brown mottles and is 11 inches thick. The subsoil extends to a depth of 70 inches or more. The upper 35 inches are light gray loam with yellowish brown mottles, and the lower part is light gray sandy loam with yellowish brown mottles.

The soil is very strongly acid to medium acid in all horizons. Permeability is slow, and available water capacity is high. Runoff is slow, and the hazard of erosion is slight. A perched water table is 1 to 2 1/2 feet below the surface in winter and early in spring.

Included in mapping are small areas of Guyton, Mantachie, and Oaklimeter soils on flood plains and small areas of Bude and Stough soils on uplands and stream terraces.

Most areas of this soil are used for woodland. The rest is used for crops and pasture.

The soil is poorly suited to growing row crops and small grains because of wetness and flooding. If crops are grown, seedbed preparation and tillage are usually delayed by wetness early in spring.

This soil is moderately suited to grasses and legumes for hay and pasture if species that are tolerant of wet conditions are used. Proper stocking rates, controlled grazing, and weed and brush control are needed.

This soil is well suited to loblolly pine, shortleaf pine, Shumard oak, sweetgum, American sycamore, water oak, cherrybark oak, and eastern cottonwood. The hazard of erosion during logging operations is slight. Use of equipment for harvest is severely limited during wet weather. Seedling mortality and plant competition are severe.

This soil is severely limited for most urban uses and for septic tank absorption fields by wetness, flooding, and the slowly permeable subsoil.

This soil is in capability subclass IVw and woodland suitability group 2w9.

Pf—Pits-Udorthents complex. This map unit consists of sand pits, borrow pits, and Udorthents. Areas are

scattered throughout the county. The pits generally are about 25 feet deep.

Sand pits are open excavations from which sand has been removed for use in roads, driveways, and parking areas. Some material from the pits is high in clay. Borrow pits are open excavations from which soil and underlying material have been removed for use in constructing roads and dams. Some abandoned pits are reverting to woodland. A few places have a good stand of pine.

Udorthents are mainly overburden that was removed from the surface as the pit was dug and accumulations of sediment that eroded from bare pit walls and floors. The soil material supports low quality grass and trees.

Most of the vegetation in areas of this complex has little economic value and is useful only for erosion control. Many areas are not protected. Pits are generally poorly suited to crops, pasture, or woodland.

Pits and Udorthents are not assigned to a capability subclass or a woodland suitability group.

PoB2—Providence silt loam, 2 to 5 percent slopes, eroded. This gently sloping soil is on broad uplands. It is moderately well drained and has a fragipan. This soil formed in a mantle of silty material and the underlying loamy material.

Typically, the surface layer is dark brown silt loam with strong brown mottles and is about 5 inches thick. The subsoil extends to a depth of about 60 inches or more. The upper 14 inches is strong brown silt loam. Below that to a depth of about 60 inches, the subsoil is a brittle and compact fragipan. The upper 11 inches of the fragipan is strong brown silt loam with brownish and grayish mottles, and the lower part is clay loam mottled in shades of brown and gray.

In most areas of this soil, part of the original surface layer has been removed by erosion, and tillage has mixed the remaining topsoil with material from the subsoil. In some small areas all of the plow layer is original topsoil, and in other areas the plow layer is mainly subsoil material. Some areas have a few rills and shallow gullies.

This soil is very strongly acid to medium acid throughout except for the surface layer in areas that have been limed. Permeability is moderate in the upper part of the subsoil and moderately slow in the fragipan. Available water capacity is moderate. Runoff is medium, and the hazard of erosion is moderate. The high water table is perched above the fragipan at a depth of 1 1/2 to 3 feet in wet seasons. The fragipan restricts roots and limits the amount of water available to plants. The surface layer is friable and has good tilth and can be tilled easily within a wide range in moisture content. The surface tends to crust and pack after hard rains.

Included in mapping are small areas of Bude soils on uplands and terraces and small areas of Ora and Tippah soils on upland ridges and hillsides. Also included are small areas on uplands of soils that have slope of 5 to 8 percent.

Most areas of this soil are used for crops and pasture. A small acreage is in woodland.

This soil is well suited to row crops and small grains. Conservation tillage, contour farming, terraces, and grassed waterways reduce erosion on cultivated fields. Returning crop residue to the soil improves fertility and tilth and reduces crusting.

This soil is moderately suited to grasses and legumes for pasture or hay. A plant cover slows runoff and reduces erosion. Overgrazing or grazing when the soil is too wet causes surface compaction and poor tilth. Proper stocking rates, controlled grazing, and weed and brush control are needed.

This soil is moderately suited to loblolly pine, shortleaf pine, Shumard oak, yellow-poplar, and sweetgum. Woodland management limitations are slight.

This soil is moderately limited for urban uses by seasonal wetness and by shrinking and swelling. Local roads and streets are severely limited by low strength. Proper design and careful installation are needed. The moderately slow permeability in the fragipan and wetness severely limit use for septic tank absorption fields. These problems can be partially overcome by enlarging the absorption field.

This soil is in capability subclass IIe and woodland suitability group 3o7.

PoC2—Providence silt loam, 5 to 8 percent slopes, eroded. This sloping soil is on ridgetops and side slopes on uplands. This soil is moderately well drained and has a fragipan. This soil formed in a mantle of silty material and the underlying loamy material.

Typically, the surface layer is dark brown silt loam with yellowish brown mottles and is about 5 inches thick. The subsoil extends to a depth of 60 inches or more. The upper 10 inches is yellowish red silty clay loam, and the next 8 inches is yellowish red silt loam with strong brown mottles. Below this the subsoil is a brittle and compact fragipan. The upper 7 inches of the fragipan is silt loam mottled in shades of gray, brown, and red, and the lower part is sandy clay loam mottled in shades of gray, brown, and red.

In most areas of this soil, part of the original surface layer has been removed by erosion, and tillage has mixed the remaining topsoil with material from the subsoil. In some small areas all of the plow layer is original topsoil, and in other areas the plow layer is mainly subsoil material. Some areas have a few rills and shallow gullies.

This soil is very strongly acid to medium acid throughout, except for the surface layer in areas that have been limed. Permeability is moderate in the upper part of the subsoil and moderately slow in the fragipan. Available water capacity is moderate. Runoff is medium, and the hazard of erosion is moderate. The high water

table is perched above the fragipan at a depth of 1 1/2 to 3 feet in wet seasons. The fragipan restricts roots and limits the amount of water available to plants. The surface layer has good tilth, is friable, and can be tilled easily within a wide range in moisture content. The surface tends to crust and pack after hard rains.

Included in mapping are small areas of Maben and Ora soils in positions similar to those of the Providence soil. Also included are a few small areas of soils on uplands that are severely eroded and a few small areas of soils that have slope of 2 to 5 percent.

Most areas of this soil are used for crops or pasture. A small acreage is in woodland.

This soil is moderately suited to row crops and small grains. The hazard of erosion is increased if row crops are grown. Conservation tillage, contour farming, terraces, grassed waterways, and cropping systems that include grasses and legumes reduce erosion on cultivated fields. Returning crop residue to the soil improves fertility and tilth and reduces crusting.

This soil is moderately suited to grasses and legumes for pasture or hay. Overgrazing or grazing when the soil is too wet causes surface compaction and poor tilth. In a few places, gullies should be smoothed and shaped. Proper stocking rates, controlled grazing, and weed and brush control are needed.

This soil is moderately suited to loblolly pine, shortleaf pine, Shumard oak, yellow-poplar, and sweetgum. Woodland management limitations are slight.

This soil is moderately limited for most urban uses by wetness and by shrinking and swelling. Local roads and streets are also severely limited by low strength, and steepness limits use for small commercial buildings. Proper design and careful installation help to offset these problems. The moderately slow permeability in the fragipan and wetness severely limit use for septic tank absorption fields. These problems can be partially overcome by enlarging the absorption field.

This soil is in capability subclass IIIe and woodland suitability group 3o7.

Ro—Rosebloom silt loam, occasionally flooded. This nearly level soil is on flood plains. This soil is subject to occasional flooding for a few hours to 2 or 3 days in winter and early in spring before crops are planted. This soil is poorly drained and formed in silty alluvium. Slope ranges from 0 to 2 percent.

Typically, the surface layer is grayish brown silt loam with brownish mottles and is about 9 inches thick. The subsoil extends to a depth of 60 inches or more. It is gray silty clay loam with brownish mottles.

This soil is very strongly acid or strongly acid, except for the surface layer in areas that have been limed. Permeability is moderate. The available water capacity is high. Runoff is slow to ponded. The hazard of erosion is slight. The high water table is at the surface to 1 foot below in winter and early in spring.

Included in mapping are small areas of Arkabutla, Chenneby, Oaklimeter, and Urbo soils in higher positions. Also included are some small, frequently flooded areas on the flood plains of the Big Black River and lower tributaries.

Most areas of this soil are used for woodland. The rest is used for crops or pasture.

This soil is moderately suited to row crops and small grains. Seedbed preparation is delayed by wetness and flooding. Constructing field ditches and properly arranging the plant rows remove excess surface water. Returning crop residue to the soil improves fertility and tilth and reduces crusting. Conservation tillage is beneficial.

This soil is moderately suited to grasses and legumes for hay and pasture. Overgrazing or grazing when the soil is too wet causes surface compaction and poor tilth. Proper stocking rates, controlled grazing, and weed and brush control are needed.

This soil is well suited to loblolly pine, cherrybark oak, Nuttall oak, water oak, willow oak, American sycamore, sweetgum, eastern cottonwood, and green ash. The hazard of erosion during logging operations is slight. Use of equipment for harvest is severely limited during wet weather. Seedling mortality and plant competition are moderate.

This soil is severely limited for most urban uses and for septic tank absorption fields by flooding and wetness. Local roads and streets are also severely limited by low strength.

This soil is in capability subclass IIIw and woodland suitability group 2w9.

Rs—Rosebloom silt loam, frequently flooded. This nearly level soil is on flood plains. The areas are mostly wooded and are flooded two or three times each year in winter and during the crop season for periods of a few hours to several weeks. In places the stream channels are clogged with sediment and debris that cause floodwater to spread over the area. This soil is poorly drained and formed in silty alluvium. Slope ranges from 0 to 2 percent.

Typically, the surface layer is mottled grayish brown and dark brown silt loam about 9 inches thick. The subsoil extends to a depth of 60 inches or more. The upper 15 inches is gray silt loam with light olive brown mottles, the next 21 inches is gray silty clay loam with olive yellow mottles, and the lower part is gray silty clay loam with olive yellow and yellowish brown mottles.

This soil is very strongly acid or strongly acid, except for the surface layer in areas that have been limed. Permeability is moderate. Available water capacity is high. Runoff is slow to ponded, and the hazard of erosion is slight. A high water table is at the surface to 1 foot below in winter and early in spring.

Included in mapping are small areas of Arkabutla, Chenneby, and Urbo soils on higher positions on the

flood plains and small areas of Guyton soils on low terraces and flood plains.

Most areas of this soil are used for woodland and pasture. A small acreage is used for row crops.

This soil is poorly suited to row crops and small grains because of frequent flooding and wetness.

This soil is moderately suited to growing grasses and legumes for hay and pasture if species that are somewhat tolerant of wet conditions are used. Overgrazing or grazing when the soil is too wet causes surface compaction and poor tilth. Proper stocking rates, controlled grazing, and weed and brush control are needed.

This soil is well suited to cherrybark oak, green ash, eastern cottonwood, Nuttall oak, water oak, willow oak, loblolly pine, sweetgum, and American sycamore. The hazard of erosion during logging operations is slight. Use of equipment for harvest is severely limited during wet weather. Seedling mortality and plant competition are moderate.

This soil is severely limited for urban uses by flooding and wetness. Local roads and streets are also severely limited by low strength. Septic tank absorption fields are likely to malfunction when the water table is high and during floods.

This soil is in capability subclass Vw and woodland suitability group 2w9.

RuB—Ruston fine sandy loam, 2 to 5 percent slopes. This gently sloping soil is on upland ridgetops. This soil is well drained.

Typically, the surface layer is yellowish brown fine sandy loam about 7 inches thick. The subsoil extends to a depth of 80 inches or more. The upper 7 inches is yellowish red clay loam, the next 20 inches is red clay loam, the next 6 inches is yellowish red fine sandy loam with pockets of light yellowish brown lighter textured material, and the lowermost part is red sandy clay loam with mottles in shades of brown.

The soil is very strongly acid or strongly acid, except for the surface layer in areas that have been limed. Permeability is moderate, and available water capacity is moderate. Runoff is slow to medium, and the hazard of erosion is moderate. The high water table is below a depth of 6 feet. The rooting zone is deep and is easily penetrated by plant roots. The surface layer is friable and can be tilled easily within a wide range in moisture content.

Included in mapping are small areas of Ora, Providence, and Tippah soils, which are on upland ridges and hillsides.

Most areas of this soil are cultivated or are used for pasture. The rest is in woodland.

This soil is well suited to row crops and small grains. Crop rotation, contour farming, terraces, grassed waterways, and conservation tillage reduce erosion on cultivated fields. Returning crop residue to the soil improves fertility and tilth and reduces crusting.

The soil is well suited to grasses and legumes for hay and pasture. Proper stocking rates, controlled grazing, and weed and brush control are needed.

The soil is moderately suited to loblolly pine and shortleaf pine. Woodland management limitations are slight.

The soil is only slightly limited for most urban uses and for septic tank absorption fields.

This soil is in capability subclass IIe and woodland suitability group 3o1.

RuC—Ruston fine sandy loam, 5 to 8 percent slopes. This sloping soil is on ridgetops and hillsides. This soil is well drained.

Typically, the surface layer is yellowish brown fine sandy loam about 6 inches thick. The subsoil extends to a depth of 80 inches or more. The upper 12 inches is yellowish red clay loam, the next 10 inches is red sandy clay loam, the next 9 inches is yellowish red sandy loam, the next 15 inches is red sandy clay loam with yellowish brown and light yellowish brown mottles, and the lowermost part is mottled red, yellowish brown, and pale brown sandy clay loam.

This soil is very strongly acid or strongly acid throughout, except for the surface layer in areas that have been limed. Permeability is moderate, and the available water capacity is moderate. Runoff is medium, and the hazard of erosion is moderate. The high water table is below a depth of 6 feet. The rooting zone is deep and is easily penetrated by plant roots. The surface layer is friable and can be tilled easily within a wide range in moisture content.

Included in mapping are small areas of Ora, Providence, and Tippah soils on upland ridges and hillsides and small areas where slope is more than 8 percent.

Most areas of this soil are in woodland. A small acreage is used for crops and pasture.

This soil is moderately suited to row crops (fig. 2) and small grains. The hazard of erosion is the main limitation. Crop rotation, conservation tillage, contour farming, contour stripcropping, terraces, and grassed waterways reduce erosion on cultivated fields. Returning crop residue to the soil improves fertility and tilth and reduces crusting.

This soil is well suited to grasses and legumes for hay and pasture. Proper stocking rates, controlled grazing, and weed and brush control are needed.

This soil is moderately suited to loblolly pine and shortleaf pine. Woodland management limitations are slight.

This soil is only slightly limited for most urban uses. Steepness moderately limits use for small commercial buildings, but this problem can be easily overcome by

Figure 2.—Ruston fine sandy loam, 5 to 8 percent slopes, is moderately suited to row crops such as cotton.

good design and careful installation. This soil is only slightly limited for septic tank absorption fields.

This soil is in capability subclass IIIe and woodland suitability group 3o1.

SaB2—Savannah fine sandy loam, 2 to 5 percent slopes, eroded. This gently sloping soil is on upland ridges. This soil is moderately well drained and has a fragipan.

Typically, the surface layer is brown fine sandy loam about 6 inches thick. The subsurface layer is pale brown and yellowish brown loam about 4 inches thick. The upper 11 inches of the subsoil is yellowish brown loam with pale brown mottles in the lower part. The lower part of the subsoil is a dense and compact fragipan that extends to a depth of 70 inches or more. The upper 22 inches of the fragipan is loam and is mottled in shades of brown and gray, and the lower part is sandy clay loam mottled in shades of brown and gray.

In most areas of this soil, part of the original surface layer has been removed by erosion, and tillage has mixed the remaining topsoil with material from the subsoil. In some small areas all of the plow layer is original topsoil, and in other areas the plow layer is mainly subsoil material. Some areas have a few rills and shallow gullies.

The soil is very strongly acid or strongly acid except for the surface layer in areas that have been limed. Permeability is moderate in the upper part of the subsoil and moderately slow in the fragipan. Available water capacity is moderate. Runoff is medium, and the hazard of erosion is slight to moderate. A perched water table above the fragipan fluctuates between 1 1/2 and 3 feet below the surface late in winter and early in spring. The

fragipan restricts plant roots and restricts the amount of water available to plants. The surface layer is friable and can be tilled easily within a wide range in moisture content.

Included in mapping are small areas of Ora and Ruston soils on upland ridges and hillsides and small areas of Stough soils on upland flats and stream terraces.

About half of the acreage of this soil is used for row crops and pasture. The rest is in woodland.

This soil is well suited to row crops and small grains. Conservation tillage, crop rotation, contour farming, terraces and vegetated waterways reduce erosion on cultivated fields. Returning crop residue to the soil improves fertility and tilth and reduces crusting.

This soil is well suited to grasses and legumes for pasture and hay. Proper stocking rates, controlled grazing, and weed and brush control are needed.

This soil is moderately suited to loblolly pine, shortleaf pine, and southern red oak. Most woodland management limitations are slight. Plant competition is moderate.

This soil is moderately limited for most urban uses by wetness. This problem can be overcome by good design and careful installation. The moderately slow permeability in the fragipan severely limits use for septic tank absorption fields. This problem can be overcome by increasing the size of the absorption field.

This soil is in capability subclass IIe and woodland suitability group 3o7.

SaC2—Savannah fine sandy loam, 5 to 8 percent slopes, eroded. This sloping soil is on upland ridges. This soil is moderately well drained and has a fragipan.

Typically, the surface layer is dark grayish brown fine sandy loam about 6 inches thick. The subsurface layer is brown and yellowish brown loam about 4 inches thick. The upper 12 inches of the subsoil is strong brown sandy clay loam with pale brown mottles in the lower part. The lower part of the subsoil is a dense, compact, and brittle fragipan that extends to a depth of 60 inches or more. The upper 21 inches of the fragipan is sandy clay loam mottled in shades of brown and gray. The lower part is sandy loam mottled in shades of brown, gray, and red.

In most areas of this soil, part of the original surface layer has been removed by erosion, and tillage has mixed the remaining topsoil with material from the subsoil. In some small areas all of the plow layer is original topsoil, and in other areas the plow layer is mainly subsoil material. Some areas have a few rills and shallow gullies.

The soil is very strongly acid or strongly acid except for the surface layer in areas that have been limed. Permeability is moderate in the upper part of the soil and moderately slow in the fragipan. Available water capacity is moderate. Runoff is medium, and the hazard of erosion is moderate. A perched water table above the fragipan fluctuates between 1 1/2 and 3 feet below the surface late in winter and early in spring. The fragipan restricts plant roots and limits the amount of water available to plants. The surface layer is friable and can be tilled easily within a wide range in moisture content.

Included in mapping are a few small areas of Ora, Providence, and Ruston soils on upland ridges and hillsides. Also included are a few small areas that are severely eroded.

Most areas of this soil are in woodland. The rest is cultivated or is used for pasture.

This soil is moderately suited to row crops and small grains because of the erosion hazard. Conservation tillage, terraces, contour farming, grassed waterways, contour stripcropping, and crop rotation reduce erosion on cultivated fields. Returning crop residue to the soil improves fertility and tilth and reduces crusting.

This soil is moderately suited to grasses and legumes for hay and pasture. Pasture is effective in controlling erosion. Proper stocking rates, controlled grazing, and weed and brush control are needed.

This soil is moderately suited to loblolly pine, shortleaf pine, and southern red oak. Most woodland management limitations are slight. Plant competition is moderate.

This soil is moderately limited for most urban uses by wetness and steepness. These problems can be easily overcome by good design and careful installation. The moderately slow permeability in the fragipan severely limits use for septic tank absorption fields. This problem can be overcome by increasing the size of the absorption field. Wetness is also a severe limitiation for septic fields.

This soil is in capability subclass IIIe and woodland suitability group 3o7.

SmE—Smithdale fine sandy loam, 8 to 15 percent slopes. This strongly sloping to moderately steep soil is on uplands. This soil is well drained and formed in loamy material.

Typically, the surface layer is brown fine sandy loam about 7 inches thick. The subsoil extends to a depth of 80 inches or more. The upper 21 inches is red sandy clay loam, the next 19 inches is yellowish red sandy clay loam, and the lower part is red sandy loam and contains pockets of uncoated sand grains.

This soil is very strongly acid or strongly acid throughout, except for the surface layer in areas that have been limed. Permeability is moderate in the upper part of the subsoil and moderately rapid in the lower part. Available water capacity is moderate. Runoff is rapid, and the hazard of erosion is severe. The water table is more than 6 feet below the surface.

Included in mapping are small areas of Maben, Ruston, and Ora soils on upland ridges and hillsides.

Most areas of this soil are used for woodland or pasture.

This soil is poorly suited to row crops and small grains because of steepness and the severe erosion hazard.

This soil is moderately suited to grasses and legumes for hay and pasture. Hay and pasture are effective in controlling erosion. Proper stocking rates, controlled grazing, and weed and brush control are needed.

This soil is moderately suited to loblolly pine and shortleaf pine. Most woodland management limitations are slight. Plant competition is moderate.

This soil is moderately limited for urban uses by steepness. Proper design and construction are needed. Limitations for small commercial buildings are severe. Steepness moderately limits use of this soil for septic tank absorption fields. This problem can be partially overcome by installing the lines on the contour.

This soil is in capability subclass VIe and woodland suitability group 3o1.

SmF—Smithdale fine sandy loam, 15 to 35 percent slopes. This steep soil is on uplands. This soil is well drained and formed in loamy materials.

Typically, the surface layer is dark grayish brown fine sandy loam about 2 inches thick. The subsurface layer is yellowish brown fine sandy loam about 8 inches thick. The upper 25 inches of the subsoil is red sandy clay loam, the next 25 inches is red sandy loam that has pockets of uncoated sand grains, and the lower part, which extends to a depth of 80 inches or more, is yellowish red sandy loam that has pockets of uncoated sand grains.

This soil is very strongly acid or strongly acid throughout, except for the surface layer in areas that have been limed. Permeability is moderate in the upper part of the subsoil and moderately rapid in the lower part. Available water capacity is moderate. Runoff is rapid, and the hazard of erosion is severe. The water table is below a depth of 6 feet.

Included in mapping are small areas of Maben, Ruston, and Ora soils on upland ridges and hillsides.

Most areas of this soil are used for woodland. A small acreage is used for pasture.

This soil is poorly suited to row crops, small grains, or grasses and legumes for hay and pasture because of steepness and the erosion hazard.

This soil is moderately suited to loblolly pine and shortleaf pine. Most woodland management limitations are slight. Plant competition is moderate.

This soil is severely limited for urban uses by steepness. Steepness also severely limits use for septic tank absorption fields, but this problem can be partially overcome by installing the lines on the contour.

This soil is in capability subclass VIIe and woodland suitability group 3o1.

SN—Smithdale-Maben association, hilly. These soils are on uplands. The landscape is hilly with narrow, winding ridgetops, moderately steep to steep hillsides, and narrow drainageways. Slope ranges from 12 to 35 percent.

The Smithdale soils make up 46 percent of this association, the Maben soils make up 37 percent, and minor soils make up 17 percent. The areas of the major soils are large enough to map separately, but since present and expected use are similar they were mapped together. The major soils occur in a regularly repeating pattern. The Smithdale soils are on hillsides, and the Maben soils are on upland ridges and hillsides. The Smithdale soils are well drained and formed in loamy material. The Maben soils are well drained and formed in stratified loam and shaley clay. Mapped areas range from 200 to 1,000 acres in size.

The Smithdale soils typically have a surface layer of dark grayish brown fine sandy loam about 5 inches thick. The subsurface layer is brown fine sandy loam about 8 inches thick. The upper 30 inches of the subsoil is red sandy clay loam, and the lower part is red sandy loam to a depth of 82 inches or more.

The Smithdale soils are very strongly acid or strongly acid throughout. Permeability is moderate in the upper part of the subsoil and moderately rapid in the lower part. Available water capacity is moderate. Surface runoff is rapid, and the hazard of erosion is severe. The high water table is more than 6 feet below the surface.

The Maben soils typically have a surface layer of dark grayish brown fine sandy loam about 4 inches thick. The subsurface layer is brown fine sandy loam about 6 inches thick. The upper 20 inches of the subsoil is yellowish red clay loam, and the lower 10 inches is strong brown clay loam with gray shale fragments. The underlying material extends to a depth of 60 inches or more. It consists of stratified layers of partially weathered gray shale and fine sandy loam in shades of yellow, brown, gray, and red.

The Maben soils are very strongly acid to slightly acid, except for the surface layer in areas that have been limed. Permeability is moderately slow. The available water capacity is high. Runoff is rapid, and the hazard of erosion is severe. The clayey subsoil and underlying material restrict transmission of air and water. The high water table is more than 6 feet below the surface.

This association includes a few small areas of Ora, Providence, and Tippah soils on upland ridges and hillsides and a few small areas of poorly drained, loamy alluvial soils in the narrow drainageways.

Most areas of these soils are used for woodland.

These soils are poorly suited to row crops, small grains, pasture, and hay because of steepness and the erosion hazard.

The Smithdale soils are moderately suited to loblolly pine and shortleaf pine. Most woodland management limitations are slight. Plant competition is moderate.

The Maben soils are moderately suited to loblolly pine and shortleaf pine. The hazard of erosion during logging operations is slight. Use of equipment for harvest is

moderately limited during wet weather. Seedling mortality is moderate, and plant competition is slight.

Smithdale and Maben soils are severely limited for most urban uses by steepness. The Maben soils are also severely limited for urban uses by a high shrink-swell potential and for local roads and streets by low strength. The problems can be overcome by good design and careful installation. Steepness severely limits use of the soils in this unit for septic tank absorption fields, as does the moderately slow permeability in the clayey subsoil of the Maben soils. The problems caused by steepness can be partially overcome by installing the lines on the contour. The problems caused by restricted permeability can be partially overcome by enlarging the field.

These soils are in capability subclass VIIe. The Smithdale soils are in woodland suitability group 3o1, and the Maben soils are in woodland suitability group 3c2.

SR—Smithdale-Ruston association, hilly. These soils are on uplands. The landscape is hilly with narrow, winding ridgetops and sloping to steep hillsides bordering narrow drainageways. Slope ranges from 5 to 35 percent.

The Smithdale soils make up about 75 percent of this association, the Ruston soils make up 18 percent, and minor soils make up about 7 percent. The major soils occur in a regularly repeating pattern. The Smithdale soils are on the upper, middle, and lower parts of the hillsides. The Ruston soils are mainly on the narrow ridgetops, but in some places are also on the upper parts of the less sloping hillsides. Slope of the Smithdale soils ranges from 8 to 35 percent; slope of the Ruston soils ranges from 5 to 8 percent. The soils are well drained and formed in loamy material. Mapped areas range from 160 to 500 acres or more in size.

The Smithdale soils typically have a surface layer of dark grayish brown fine sandy loam about 6 inches thick. The subsurface layer is yellowish brown fine sandy loam about 8 inches thick. The subsoil extends to a depth of 82 inches or more. The upper 43 inches is red sandy clay loam, and the lower part is red sandy loam with pockets of uncoated sand grains.

The Smithdale soils are very strongly acid or strongly acid throughout. Permeability is moderate in the upper part of the subsoil and moderately rapid in the lower part. The available water capacity is moderate. Runoff is rapid, and the hazard of erosion is severe. The high water table is more than 6 feet below the surface. The rooting zone is deep and is easily penetrated by plant roots.

The Ruston soils typically have a surface layer of dark brown fine sandy loam about 3 inches thick. The subsurface layer is yellowish brown fine sandy loam about 7 inches thick. The subsoil extends to a depth of 80 inches or more. The upper 20 inches of the subsoil is red sandy clay loam; the next 21 inches is red sandy loam with pockets of pale brown, somewhat brittle material in the lower part; and the lowermost part of the subsoil is red sandy clay loam with strong brown and pale brown mottles.

Ruston soils are very strongly acid or strongly acid throughout, except for the surface layer in areas that have been limed. Permeability is moderate, and the available water capacity is moderate. Runoff is medium to rapid, and the hazard of erosion is moderate. The high water table is more than 6 feet below the surface.

This association includes small areas of Maben and Ora soils on upland ridges and hillsides and Oaklimeter soils in the narrow drainageways.

Most areas of these soils are used for woodland.

The Smithdale soils are poorly suited to row crops, small grains, pasture, or hay because of steepness and the erosion hazard. These soils should be kept in a permanent cover of grasses and legumes or trees. The Ruston soils are moderately suited to row crops and small grains and well suited to grasses and legumes for hay and pasture. Proper stocking rates, controlled grazing, and weed and brush control (fig. 3) are needed for hay and pasture.

These soils are moderately suited to loblolly pine and shortleaf pine. Most woodland management limitations are slight. Plant competition is moderate.

These soils are severely limited for urban uses by steepness except in some small, gently sloping or sloping areas where the limitations are slight to moderate. Steepness is also a severe limitation for the use of Smithdale soils for septic tank absorption fields. This limitation can be partly overcome by installing the lines on the contour. Ruston soils have only slight limitations for use as septic tank absorption fields.

The Smithdale soils are in capability subclass VIIe and woodland suitability group 3o1. The Ruston soils are in capability subclass IIIe and woodland suitability group 3o1.

SS—Smithdale-Sweatman association, hilly. These soils are on uplands. The landscape is hilly with narrow, winding ridgetops, moderately steep and steep hillsides, and narrow drainageways. Slope ranges from 12 to 35 percent.

The Smithdale soils and similar soils make up 54 percent of this association, the Sweatman soils and similar soils make up 38 percent, and minor soils make up 8 percent. The major soils occur in a regularly repeating pattern. The Smithdale soils are on the higher ridgetops and upper side slopes. The Sweatman soils are mainly on the middle and lower parts of hillsides and ridgetops. The Smithdale soils are well drained and formed in loamy material. The Sweatman soils are well drained and formed in stratified shaly clay and loamy sediment. Mapped areas are 200 to 1,000 acres in size.

Figure 3.—Bahiagrass hay grows well in less sloping areas of Smithdale-Ruston association, hilly.

The Smithdale soils typically have a surface layer of dark grayish brown fine sandy loam about 5 inches thick. The subsurface layer is brown fine sandy loam about 5 inches thick. The upper 37 inches of the subsoil is yellowish red sandy clay loam, and the lower part, which extends to a depth of 80 inches or more is red sandy loam and contains pockets of uncoated sand grains.

The Smithdale soils are very strongly acid or strongly acid throughout. Permeability is moderate in the upper part of the subsoil and moderately rapid in the lower part. Available water capacity is moderate. Runoff is rapid, and the hazard of erosion is severe. The water table is more than 6 feet below the surface.

The Sweatman soils typically have a surface layer of dark grayish brown fine sandy loam about 5 inches thick. The upper 17 inches of the subsoil is yellowish red silty clay, and the lower 11 inches is yellowish red silty clay with gray shale fragments. The underlying material extends to a depth of 60 inches or more. It is stratified layers of partially weathered gray shale and yellowish red and strong brown sandy material.

The Sweatman soils are strongly acid or very strongly acid, except for the surface layer in areas that have been limed. Permeability is moderately slow. The available water capacity is high. Runoff is medium to rapid. The hazard of erosion is severe. The water table is more than 6 feet below the surface.

This association includes a few small areas of Ora and Ruston soils on upland ridges and hillsides and a few small areas of loamy alluvial soils in the narrow drainageways.

Most areas of this association are used for woodland.

These soils are poorly suited to row crops, small grains, pasture, and hay because of steepness and the erosion hazard.

The Smithdale soils are moderately suited to loblolly pine (fig. 4) and shortleaf pine. Most woodland management limitations are slight. Plant competition is moderate.

The Sweatman soils are moderately suited to loblolly pine and shortleaf pine. Most woodland management limitations are slight. Use of equipment for harvest is moderately limited during wet weather.

The Smithdale and Sweatman soils are severely limited for most urban uses and for septic tank absorption fields because of steepness. In addition, the Sweatman soils are severely limited for local roads and streets because of low strength. The Sweatman soils are also severely limited for septic tank absorption fields because of the moderately slow permeability; the problems can be partially overcome by enlarging the absorption field. The problems caused by steepness can be partially overcome by installing the lines on the contour.

These soils are in capability subclass VIIe. The Smithdale soils are in woodland suitability group 3o1, and the Sweatman soils are in woodland suitability group 3c2.

Figure 4.—Young stand of loblolly pine on Smithdale-Sweatman association, hilly.

St—Stough fine sandy loam, 0 to 2 percent slopes. This nearly level soil is on stream terraces and upland flats. This soil is somewhat poorly drained and formed in loamy material. Slope ranges from 0 to 2 percent.

Typically, the surface layer is mottled dark grayish brown, grayish brown, and pale brown fine sandy loam about 5 inches thick. The subsurface layer is mottled yellowish brown, pale brown, and grayish brown loam about 4 inches thick. The subsoil extends to a depth of 62 inches or more. The upper 8 inches is yellowish brown loam with pale brown and gray mottles; the next 10 inches is mottled yellowish brown, light yellowish brown, and light brownish gray loam; the next 7 inches is sandy clay loam mottled in shades of brown and gray; the next 18 inches is loam mottled in shades of brown and gray; and the lowermost part is sandy clay loam mottled in shades of brown and gray.

This soil is very strongly acid or strongly acid throughout, except for the surface layer in areas that have been limed. Permeability is moderate in the upper part of the subsoil and moderately slow in the lower part. Available water capacity is moderate. Runoff is slow, and the hazard of erosion is slight. The high water table is 1 to 1 1/2 feet below the surface in winter and early in spring. The rooting zone is deep and is easily penetrated by plant roots. The surface layer is friable and has fair tilth and can be tilled easily within a wide range in moisture content.

Included in mapping are small areas of Mantachie soils on flood plains, Ozan soils on stream terraces and

flood plains, and Ora and Savannah soils on upland ridges and hillsides.

Most areas of this soil are used for crops and pasture. The rest is in woodland.

This soil is well suited to row crops and small grains. Properly arranging plant rows and constructing field ditches remove excess surface water. Returning crop residue to the soil improves fertility and tilth and reduces crusting.

This soil is moderately suited to grasses and legumes for hay and pasture because of limited productivity. Overgrazing or grazing when the soil is too wet causes surface compaction and poor tilth. Proper stocking rates, controlled grazing, and weed and brush control are needed.

This soil is well suited to cherrybark oak, water oak, loblolly pine, slash pine, and sweetgum. The hazard of erosion during logging operations is slight. Use of equipment for harvest is moderately limited during wet weather. Plant competition is moderate, and seedling mortality is slight.

This soil is severely limited for urban uses by wetness. This problem can be partially overcome by good design and careful installation. Use for septic tank absorption fields is also severely limited by wetness and by moderately slow permeability in the lower part of the subsoil. The problems caused by restricted permeability can be partially overcome by increasing the size of the absorption field.

This soil is in capability subclass IIw and woodland suitability group 2w8.

SwC—Sweatman silt loam, 5 to 8 percent slopes. This sloping soil is on ridgetops and upper parts of side slopes of uplands. It is well drained.

Typically, the surface layer is brown silt loam about 6 inches thick. The upper 11 inches of the subsoil is red silty clay, the next 11 inches is yellowish red silty clay with pale brown and strong brown mottles, and the lower 9 inches is red silty clay with strong brown mottles and light gray shale fragments. The underlying material extends to a depth of 62 inches or more; it is stratified layers of light brownish gray weathered shale and yellowish red and light olive brown fine sandy loam.

This soil is very strongly acid or strongly acid throughout. Permeability is moderately slow, and available water capacity is high. Runoff is rapid, and the hazard of erosion is severe. The water table is more than 6 feet below the surface. The rooting zone is moderately deep and is easily penetrated by plant roots. The surface layer is friable and can be tilled easily within a wide range in moisture content, but it usually crusts and packs after hard rains.

Included in mapping are a few small eroded areas. Also included are small areas of Ora, Providence, and Tippah soils on upland ridges and hillsides. A few small areas of Sweatman soils on upland ridges and hillsides have a fine sandy loam or loam surface layer.

Most areas of this soil are used for woodland and pasture. A small acreage is in row crops.

This soil is poorly suited to row crops, small grains, and pasture because of the severe hazard of erosion and low productivity.

This soil is moderately suited to loblolly pine and shortleaf pine. Most woodland management limitations are only slight. Use of equipment for harvest is moderately limited during wet weather.

This soil has moderate limitations for urban uses. Limitations for local roads and streets are severe because of low strength. Special design and careful installation can prevent damage by shrinking and swelling. The moderately slow permeability of the clayey subsoil severely limits use for septic tank absorption fields. This problem can be partly overcome by increasing the size of the absorption field.

This soil is in capability subclass IVe and woodland suitability group 3c2.

SwE—Sweatman fine sandy loam, 8 to 15 percent slopes. This strongly sloping and moderately steep soil is on uplands. It is well drained.

Typically, the surface layer is brown fine sandy loam about 5 inches thick. The upper 13 inches of the subsoil is red silty clay, the next 4 inches is red silty clay with strong brown mottles, and the lower 4 inches is red silty clay with strong brown mottles and gray shale fragments. The underlying material extends to a depth of 60 inches or more; it is stratified yellowish red and strong brown fine sandy loam and light olive brown and light gray partially weathered shale.

The soil is very strongly acid or strongly acid throughout. Permeability is moderately slow, and available water capacity is high. Runoff is rapid, and the hazard of erosion is severe if a plant cover is not maintained. The water table is more than 6 feet below the surface.

Included with this soil in mapping are small areas of Ora, Providence, and Tippah soils on upland ridges and hillsides. Also included are a few small areas of Sweatman soils that have a silt loam or loam surface layer.

Most areas of this soil are in woodland and pasture.

This soil is poorly suited to row crops, small grains, and pasture because of steepness and the severe hazard of erosion. A permanent cover of trees or grasses and legumes should be maintained.

This soil is moderately suited to loblolly pine and shortleaf pine. Woodland management limitations are only slight. Use of equipment for harvest is moderately limited during wet weather.

This soil is severely limited for urban uses by steepness. Low strength severely limits use for local roads and streets. The moderately slow permeability of

the clayey subsoil severely limits use for septic tank absorption fields, but this problem can be partly overcome by increasing the size of the absorption field.

This soil is in capability subclass VIIe and woodland suitability group 3c2.

SwF—Sweatman fine sandy loam, 15 to 25 percent slopes. This steep soil is on uplands. It is well drained.

Typically, the surface layer is dark grayish brown fine sandy loam about 4 inches thick. The upper 12 inches of the subsoil is yellowish red silty clay. Below this is yellowish red silty clay with yellowish brown mottles and light gray shale fragments. To a depth of about 32 inches, the underlying material is mottled yellowish red and yellowish brown silty clay with light gray shale fragments. Below this the underlying material is stratified yellowish red and yellowish brown loamy material and light brownish gray, partially weathered shale and extends to a depth of 60 inches or more.

This soil is very strongly acid or strongly acid throughout. Permeability is moderately slow, and available water capacity is high. Runoff is rapid, and the hazard of erosion is severe. The seasonal high water table is more than 6 feet below the surface.

Included with this soil in mapping are a few small areas of Ora, Providence, and Tippah soils on upland ridges and hillsides.

Most areas of this soil are in woodland. A small acreage is in pasture.

This soil is poorly suited to row crops and small grains because of steepness and the severe hazard of erosion. Permanent vegetation should be maintained.

This soil is poorly suited to most grasses and legumes for hay and pasture because productivity is low. However, hay and pasture are effective in controlling erosion. Proper stocking rates, controlled grazing, and weed and brush control are needed.

This soil is moderately suited to loblolly pine and shortleaf pine. Woodland management limitations are slight. Use of equipment for harvest is moderately limited during wet weather.

This soil has severe limitations for urban uses because of steepness. Low strength severely limits use for local roads and streets. The moderately slow permeability of the clayey subsoil and the steep slope severely limit use for septic tank absorption fields. Enlarging the absorption field can partly overcome the problems caused by restricted permeability. The problems caused by steepness can be overcome by installing septic field lines on the contour.

This soil is in capability subclass VIIe and woodland suitability group 3c2.

SX—Sweatman-Providence association, hilly. These soils are on rough uplands. The landscape is a mass of moderately steep and steep hills with narrow, winding ridgetops and narrow drainageways. Slope ranges from 12 to 35 percent.

The Sweatman soils make up about 61 percent of this association, the Providence soils and similar soils make up about 24 percent, and minor soils make up about 15 percent. The Sweatman soils are mainly on the steep hillsides. The Providence soils are mainly on the narrow ridgetops and in some places are on the upper parts of less sloping hillsides. The Sweatman soils are well drained and formed in stratified shaly clay and loamy sediment. The Providence soils are moderately well drained and formed in a thin mantle of silty material and the underlying loamy material.

The Sweatman soils typically have a surface layer of dark brown fine sandy loam about 6 inches thick. The upper 14 inches of the subsoil is yellowish red silty clay, the next 8 inches is yellowish red silty clay with strong brown mottles, and the lower 7 inches is silty clay mottled in shades of red and brown and containing partially weathered fragments of grayish shale. To a depth of 60 inches or more the underlying material is stratified red and yellowish brown loamy material and partially weathered gray shale.

Sweatman soils are very strongly acid or strongly acid throughout. Permeability is moderately slow, and available water capacity is high. Runoff is rapid, and the hazard of erosion is severe. The water table is more than 6 feet below the surface.

The Providence soils typically have a surface layer of brown silt loam about 2 inches thick. The subsurface layer is brown silt loam about 5 inches thick. The upper 15 inches of the subsoil is yellowish red silty clay loam. The lower part of the subsoil is a dense and compact fragipan that extends to a depth of 60 inches or more. The upper 22 inches of the fragipan is silt loam mottled in shades of red, brown, and gray, and the lower part of the fragipan is clay loam mottled in shades of red, brown, and gray.

Providence soils range from very strongly acid to medium acid throughout. Permeability is moderate in the upper part of the subsoil and moderately slow in the fragipan. Available water capacity is moderate. In wet seasons the high water table is perched above the fragipan at a depth of 1 1/2 to 3 feet. Runoff is medium to rapid, and the hazard of erosion is severe unless a plant cover is maintained.

This association includes a few small areas of Smithdale soils on the upper parts of hillsides, a few small areas of Ora and Tippah soils on narrow ridgetops and hillsides, and small areas of Oaklimeter soils in narrow drainageways.

Most areas of this association are used for woodland.

The Sweatman soils are poorly suited to pasture grasses and legumes, row crops, and small grains because of steepness and the severe hazard of erosion. Permanent vegetation should be maintained. The Providence soils are poorly suited to row crops because

of steepness but are moderately suited to grasses and legumes for hay and pasture. They also have a severe hazard of erosion.

The Sweatman soils are moderately suited to loblolly pine and shortleaf pine. The Providence soils are moderately suited to loblolly pine, shortleaf pine, Shumard oak, yellow-poplar, and sweetgum. Woodland management limitations are slight. Use of equipment for harvest is moderately limited on the Sweatman soils during wet weather.

These soils are severely limited for urban uses by steepness. Low strength severely limits use for local roads and streets. Special design and careful installation are required. The Sweatman soils are steep and have a clayey subsoil with moderately slow permeability. These characteristics severely limit use for septic tank absorption fields. Wetness and the moderately slow permeability of the fragipan in the Providence soils are also severe limitations. Increasing the size of the absorption field can partly overcome the problems caused by permeability and wetness. The steepness can be partly overcome by installing septic field lines on the contour.

The Sweatman soils are in capability subclass VIIe, and the Providence soils are in capability subclass VIe. The Sweatman soils are in woodland suitability group 3c2, and the Providence soils are in woodland suitability group 3o7.

TaB2—Tippah silt loam, 2 to 5 percent slopes, eroded. This gently sloping soil is on ridgetops on uplands. This soil is moderately well drained and formed in a mantle of silty material and the underlying clay.

Typically, the surface layer is dark grayish brown silt loam about 5 inches thick. The subsoil extends to a depth of about 60 inches or more. The upper 4 inches is strong brown silt loam, the next 11 inches is yellowish red silty clay loam, the next 8 inches is yellowish red silt loam with mottles in shades of gray, the next 17 inches is red clay mottled in shades of gray and brown, and the lowermost part is silty clay mottled in shades of red, gray, and brown.

In most areas of this soil, part of the original surface layer has been removed by erosion, and tillage has mixed the topsoil with material from the subsoil. In some small areas all of the plow layer is original topsoil, and in other places the plow layer is mainly subsoil material. Some places have a few rills and shallow gullies.

This soil ranges from very strongly acid to medium acid throughout, except for the surface layer in areas that have been limed. Permeability is moderate in the upper part of the subsoil and slow in the lower part. Available water capacity is high. Runoff is medium, and the hazard of erosion is moderate. The high water table is perched at a depth of 2 to 2 1/2 feet in winter and spring. The rooting zone is deep and is easily penetrated by plant roots. The surface layer is friable and can be tilled easily within a wide range in moisture content. The surface tends to crust and pack after hard rains.

Included in mapping are small areas of Maben and Providence soils on upland ridges and hillsides. Also included are a few small areas of soils that have slope of as much as 7 percent.

Most areas of this soil are used for crops or pasture. A small acreage is in woodland.

This soil is well suited to row crops and small grains. Conservation tillage, crop rotation, contour farming, grassed waterways, and terraces reduce erosion on cultivated fields. Returning crop residue to the soil improves fertility and tilth and reduces crusting.

This soil is well suited to grasses and legumes for hay or pasture. A plant cover reduces erosion. Overgrazing or grazing when the soil is too wet causes surface compaction and poor tilth. Proper stocking rates, controlled grazing, and weed and brush control are needed.

This soil is moderately suited to cherrybark oak, loblolly pine, Shumard oak, sweetgum, white oak, and yellow-poplar. Plant competition is moderate; other woodland management limitations are slight.

This soil is severely limited for urban uses by wetness and high shrink-swell potential. Local roads and streets are also severely limited by low strength. Proper design and careful installation are required. Slow permeability in the clayey lower part of the subsoil and wetness severely limit use for septic tank absorption fields. These problems can be partially overcome by increasing the size of the absorption field.

This soil is in capability subclass IIe and woodland suitability group 3o7.

TaC2—Tippah silt loam, 5 to 8 percent slopes, eroded. This sloping soil is on ridgetops and side slopes on the uplands. This soil is moderately well drained and formed in a mantle of silty material and the underlying clay.

Typically, the surface layer is dark grayish brown silt loam about 2 inches thick over 3 inches of grayish brown silt loam with pale brown mottles. The subsoil extends to a depth of about 60 inches or more. The upper 12 inches is yellowish red silty clay loam, the next 18 inches is yellowish red silty clay loam mottled in shades of brown and gray, and the lower part is red silty clay mottled in shades of brown and gray.

In most areas of this soil, part of the original surface layer has been removed by erosion, and tillage has mixed the topsoil with material from the subsoil. In some areas all of the plow layer is original topsoil, and in other places the plow layer is mainly subsoil material. Some areas have a few rills and shallow gullies.

This soil is very strongly acid to medium acid throughout, except for the surface layer in areas that have been limed. Permeability is moderate in the upper part of the subsoil and slow in the lower part. Available

water capacity is high. Runoff is medium, and the hazard of erosion is moderate. The seasonal high water table is perched at a depth of 2 to 2 1/2 feet. The rooting zone is deep and is easily penetrated by plant roots. The surface layer is friable and can be tilled easily within a wide range in moisture content, but it usually crusts and packs after hard rains.

Included in mapping are small areas of Providence soils on upland ridges and hillsides. Also included are a few small areas of severely eroded Tippah soils on uplands.

Most areas of this soil are used for pasture or woodland. A small acreage is used for crops.

This soil is moderately suited to row crops and small grains. Erosion is a hazard. Conservation tillage, contour farming, contour stripcropping, crop rotation, grassed waterways, and terraces reduce erosion. Returning crop residue to the soil improves fertility and tilth and reduces crusting.

This soil is well suited to grasses and legumes for hay or pasture (fig. 5). A plant cover reduces erosion. Gullies need to be smoothed and shaped in a few places. Overgrazing or grazing when the soil is too wet causes surface compaction and poor tilth. Proper stocking rates, controlled grazing, and weed and brush control are needed.

This soil is moderately suited to cherrybark oak, loblolly pine, Shumard oak, sweetgum, white oak, and yellow-poplar. Plant competition is moderate; other woodland management limitations are slight.

This soil is severely limited for urban uses by wetness and high shrink-swell potential. Local roads and streets are also severely limited by low strength. Proper design and careful installation are required. Wetness and slow permeability of the clayey lower part of the subsoil severely limit use for septic tank absorption fields. These problems can be partially overcome by increasing the size of the absorption field.

This soil is in capability subclass IIIe and woodland suitability group 3o7.

Ur—Urbo silt loam, occasionally flooded. This nearly level soil is on flood plains. This soil is occasionally flooded for a few hours to as much as 2 or 3 days in winter and early in spring before crops are

Figure 5.—Bahiagrass provides good grazing for beef cattle on Tippah silt loam, 5 to 8 percent slopes, eroded.

planted. This soil is somewhat poorly drained and formed in clayey alluvium. Slope ranges from 0 to 2 percent.

Typically, the surface layer is mottled grayish brown, dark yellowish brown, and dark brown silt loam about 8 inches thick. The subsoil extends to a depth of about 60 inches or more. The upper 7 inches is grayish brown silty clay loam that has dark yellowish brown mottles, the next 15 inches is grayish brown silty clay that has dark yellowish brown mottles, the next 13 inches is grayish brown clay that has yellowish brown mottles, and the lowermost part is gray silty clay that has yellowish brown and light olive brown mottles.

This soil is very strongly acid or strongly acid throughout, except for the surface layer in areas that have been limed. Permeability is very slow. Available water capacity is high. Runoff is slow. The hazard of erosion is slight. From winter through early spring, the high water table fluctuates between 1 and 2 feet below the surface. The rooting zone is deep, but penetration by plant roots may be restricted by the clayey subsoil. The surface layer is friable and can be kept in fair tilth through a moderate range in moisture content, but it usually crusts and packs after hard rains.

Included in mapping are small areas of Arkabutla and Chenneby soils, which are in positions on the flood plains similar to those of the Urbo soil. Also included are some small areas on bottoms of the Big Black River that are frequently flooded.

Most areas of this soil are used for crops or pasture. A small acreage is in woodland.

This soil is well suited to row crops and small grains. Properly arranging plant rows and constructing field ditches remove excess surface water. Returning crop residue to the soil improves fertility and tilth and reduces crusting.

This soil is well suited to grasses and legumes for hay and pasture. Overgrazing or grazing when the soil is too wet causes surface compaction and poor tilth. Proper stocking rates, controlled grazing, and weed and brush control are needed.

This soil is well suited to American sycamore, cherrybark oak, eastern cottonwood, green ash, loblolly pine, sweetgum, and yellow-poplar. The hazard of erosion during logging operations is slight. Use of equipment for harvest is moderately limited during wet weather. Seedling mortality is slight. Plant competition is moderate.

This soil is severely limited for urban uses by seasonal wetness and flooding. Streets and local roads are also severely limited by low strength. Flooding, wetness, and very slow permeability in the clayey subsoil severely limit use for septic tank absorption fields.

This soil is in capability subclass IIw and woodland suitability group 1w6.

Prime Farmland

In this section, prime farmland is defined and discussed, and the prime farmland soils in Choctaw County are listed.

Prime farmland is one of several kinds of important farmland defined by the U.S. Department of Agriculture. It is of major importance in meeting the nation's short- and long-range needs for food and fiber. The acreage of high-quality farmland is limited, and the U.S. Department of Agriculture recognizes that government at local, state, and federal levels, as well as individuals, must encourage and facilitate the wise use of our nation's prime farmland.

Prime farmland soils, as defined by the U.S. Department of Agriculture, are soils that are best suited to producing food, feed, forage, fiber, and oilseed crops. Such soils have properties that are favorable for the economic production of sustained high yields of crops. The soils need only to be treated and managed using acceptable farming methods. The moisture supply, of course, must be adequate, and the growing season has to be sufficiently long. Prime farmland soils produce the highest yields with minimal inputs of energy and economic resources, and farming these soils results in the least damage to the environment.

Prime farmland soils may presently be in use as cropland, pasture, or woodland, or they may be in other uses. They either are used for producing food or fiber or are available for these uses. Urban or built-up land and water areas cannot be considered prime farmland.

Prime farmland soils usually get an adequate and dependable supply of moisture from precipitation or irrigation. The temperature and growing season are favorable. The acidity or alkalinity level of the soils is acceptable. The soils have few or no rocks and are permeable to water and air. They are not excessively erodible or saturated with water for long periods and are not subject to frequent flooding during the growing season. The slope ranges mainly from 0 to 5 percent.

Soils that have a high water table, are subject to flooding, or are droughty may qualify as prime farmland soils if the limitations or hazards are overcome by drainage, flood control, or irrigation. Onsite evaluation is necessary to determine the effectiveness of corrective measures. More information on the criteria for prime farmland can be obtained at the local office of the Soil Conservation Service.

About 56,000 acres, or nearly 21 percent, of Choctaw County meets the soil requirements for prime farmland. These soils are throughout the county, but are mainly in general soil map units 2, 3, and 9.

A recent trend in land use in some parts of the county has been the conversion of some prime farmland to urban and industrial uses. The loss of prime farmland to other uses puts pressure on marginal lands, which generally are wet, more erodible, droughty, or difficult to cultivate and less productive than prime farmland.

The following map units, or soils, make up prime farmland in Choctaw County. On some soils included in the list, appropriate measures have been applied to overcome a limitation of wetness. The location of each map unit is shown on the detailed soil maps at the back of this publication. The extent of each unit is given in table 4. The soil qualities that affect use and management are described in the section "Detailed Soil Map Units." This list does not constitute a recommendation for a particular land use.

Ae	Ariel silt loam, occasionally flooded
Ak	Arkabutla silt loam, occasionally flooded (if adequately drained)
Bu	Bude silt loam, 0 to 2 percent slopes
Ca	Cascilla silt loam, occasionally flooded
Ce	Chenneby silt loam, occasionally flooded
Kk	Kirkville fine sandy loam, occasionally flooded
MaB	Maben silt loam, 2 to 5 percent slopes
Mt	Mantachie loam, occasionally flooded (if adequately drained)
Oa	Oaklimeter silt loam, occasionally flooded
OrB2	Ora loam, 2 to 5 percent slopes, eroded
Oz	Ozan loam, occasionally flooded (if adequately drained)
PoB2	Providence silt loam, 2 to 5 percent slopes, eroded
RuB	Ruston fine sandy loam, 2 to 5 percent slopes
SaB2	Savannah fine sandy loam, 2 to 5 percent slopes, eroded
TaB2	Tippah silt loam, 2 to 5 percent slopes, eroded
Ur	Urbo silt loam, occasionally flooded (if adequately drained)

Use and Management of the Soils

This soil survey is an inventory and evaluation of the soils in the survey area. It can be used to adjust land uses to the limitations and potentials of natural resources and the environment. Also, it can help avoid soil-related failures in land uses.

In preparing a soil survey, soil scientists, conservationists, engineers, and others collect extensive field data about the nature and behavior characteristics of the soils. They collect data on erosion, droughtiness, flooding, and other factors that affect various soil uses and management. Field experience and collected data on soil properties and performance are used as a basis in predicting soil behavior.

Information in this section can be used to plan the use and management of soils for crops and pasture; as rangeland and woodland; as sites for buildings, sanitary facilities, highways and other transportation systems, and parks and other recreation facilities; and for wildlife habitat. It can be used to identify the potentials and limitations of each soil for specific land uses and to help prevent construction failures caused by unfavorable soil properties.

Planners and others using soil survey information can evaluate the effect of specific land uses on productivity and on the environment in all or part of the survey area. The survey can help planners to maintain or create a land use pattern in harmony with the natural soil.

Contractors can use this survey to locate sources of sand and gravel, roadfill, and topsoil. They can use it to identify areas where bedrock, wetness, or very firm soil layers can cause difficulty in excavation.

Health officials, highway officials, engineers, and others may also find this survey useful. The survey can help them plan the safe disposal of wastes and locate sites for pavements, sidewalks, campgrounds, playgrounds, lawns, and trees and shrubs.

Crops and Pasture

William M. Lipe, conservation agronomist, Soil Conservation Service, helped to prepare this section.

General management needed for crops and pasture is suggested in this section. The crops or pasture plants best suited to the soils, including some not commonly grown in the survey area, are identified; the system of land capability classification used by the Soil Conservation Service is explained; and the estimated yields of the main crops and hay and pasture plants are listed for each soil.

Planners of management systems for individual fields or farms should consider the detailed information given in the description of each soil under "Detailed Soil Map Units." Specific information can be obtained from the local office of the Soil Conservation Service or the Cooperative Extension Service.

In 1978, more than 70,000 acres in Choctaw County was used for crops and pasture. Of this, about half was used for pasture, and about half for crops, mainly soybeans, corn, cotton, hay, and silage. In 1981, about 10,000 acres was planted to soybeans, 2,000 acres to corn, 1,650 acres to cotton, and 1,600 acres to wheat *(5, 20).* The acreage of field crops, particularly soybeans and wheat, has increased slightly during the last several years.

About 52,000 acres in Choctaw County is well suited to field crops. An additional 39,000 acres is suited but is moderately limited by an erosion hazard or a seasonal high water table. Many soils have more than one management problem. Ora, Providence, Savannah, and Tippah soils that have slope of 2 to 5 percent, for example, have an erosion hazard, and these soils also have the problem of seasonal wetness. Suitabilities and limitations of the soils in Choctaw County are discussed in the section "Detailed Soil Map Units."

Crop production should be increased considerably by applying the latest crop production technology to all cropland in the county. This soil survey can facilitate the application of such technology.

Soil erosion is a problem on land having slope of more than 2 percent. Loss of the surface layer of a soil through erosion is detrimental for two reasons. First, agricultural productivity is reduced. Second, sediment eroded from soils may pollute streams and lakes.

As the surface layer is removed from cropland by erosion, more of the infertile subsoil is incorporated into the plow layer. Loss of the friable surface layer is especially damaging to soils that have a clayey subsoil and to soils that have a dense, root-restricting layer in or below the subsoil. Seedbed preparation and cultivation are difficult in the clayey subsoil of Tippah and Providence soils. Restrictive layers include fragipans, as in Bude, Ora, Providence, and Savannah soils, and shale, as in Maben and Sweatman soils. Excessive

erosion also reduces the productivity of soils that tend to be droughty, such as Smithdale soils.

Soil erosion produces sediment that may be transported to streams and lakes. Control of erosion minimizes sediment pollution of water resources and improves quality of water for municipal use, recreation, and fish and wildlife.

Erosion control practices provide protective surface cover, reduce runoff, and increase water infiltration rates. A conservation cropping system that retains a plant cover on the soil for extended periods reduces erosion and sustains or improves the productive capacity of the soils. Legume and grass forage crops are especially beneficial because they produce needed cover and improve soil fertility and tilth.

Cropping systems that provide substantial cover are required to control erosion on sloping soils unless conservation tillage is practiced. Minimum tillage and retention of crop residue on the surface increase the water infiltration rate and reduce runoff and erosion. These practices can be used on most cropland in the survey area. No-till cropping of soybeans is the most cost-effective conservation practice for cropland in the survey area.

Terraces and diversions reduce the length of slope and the rate of runoff and erosion. They are most practical on well drained and moderately well drained soils that have uniform slopes. Maben, Ora, Providence, Ruston, Savannah, and Tippah soils are generally suitable for terraces. Soils with irregular or steep slopes are less suitable for terraces and diversions but are often suitable for conservation tillage.

Contouring and contour stripcropping are most effective on soils that have smooth, uniform slopes, including most areas of sloping Ora, Providence, and Savannah soils.

Information on the design of erosion control practices for each kind of soil can be obtained from the local office of the Soil Conservation Service.

Drainage is needed on about one-fourth of the acreage used for crops and pasture in Choctaw County. All soils on the flood plains need surface drainage to achieve maximum production. These include Ariel, Arkabutla, Cascilla, Chenneby, Guyton, Kirkville, Mantachie, Oaklimeter, Ozan, Rosebloom, and Urbo soils. These soils are the most productive in the county.

Bude and Stough soils are on uplands but are nearly level. Such soils also require surface drainage for maximum production.

The design of surface drainage systems varies with the kind of soil, slope, size of area to be drained, and vegetation. Information on design of drainage systems for each kind of soil can be obtained from the local office of the Soil Conservation Service.

Natural fertility and *pH* of soils on uplands in Choctaw County are low. Soils on the flood plains are also acid but are higher in natural fertility than most upland soils.

Most upland soils are very strongly acid or strongly acid. When used for crops or pasture, these soils require applications of lime to raise the pH sufficiently for good production. Available phosphorus and potash levels are naturally low in most of these soils. All applications of lime and fertilizer should be based on the results of soil tests, on the needs of the crop, and on the expected level of yield. The Cooperative Extension Service can help in determining the amount of fertilizer and lime to apply.

Soil tilth is an important factor in the germination of seeds and the infiltration of water into the soil. Soils with good tilth are granular and porous.

Most of the soils used for crops in the survey area have a silt loam, loam, or fine sandy loam surface layer that is low in organic matter. Generally, the structure of such soils is weak, and heavy rainfall on a bare surface causes the formation of a crust. This crust is hard when dry and is nearly impervious to water. It reduces water infiltration and increases runoff. Regular additions of crop residue, manure, and other organic material improve soil structure and reduce crust formation.

Fall plowing is generally not recommended for upland soils that have a silt loam or loam surface layer because a crust will form by spring. Often, soils that were plowed in fall settle and become as dense and hard at planting time as they were before plowing.

Field crops suited to the soils and climate of the survey area include many that are not now commonly grown. Cotton, corn, wheat, and soybeans are the principal row crops. Alfalfa, sorghum, millet, sunflowers, cowpeas, field beans, peanuts, potatoes, and similar crops could also be grown. Wheat and oats are the common close-growing crops. Rye and barley could be grown, and grass seed could be produced from fescue and bahiagrass.

Row crops are best suited to the occasionally flooded areas of Ariel, Arkabutla, Cascilla, Chenneby, Kirkville, Mantachie, Oaklimeter, Ozan, Rosebloom, Bude, and Urbo soils and the nearly level to sloping areas of Maben, Ora, Providence, Ruston, Savannah, and Tippah soils. Close-growing crops and pasture plants are suited to these soils and can also be grown in steeper areas of these and other soils.

The latest information and suggestions for growing crops can be obtained from the local offices of the Cooperative Extension Service and the Soil Conservation Service.

Yields Per Acre

The average yields per acre that can be expected of the principal crops under a high level of management are shown in table 5. In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors.

The yields are based mainly on the experience and records of farmers, conservationists, and extension agents. Available yield data from nearby counties and results of field trials and demonstrations are also considered.

The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the crop. Management can include drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residue, barnyard manure, and green-manure crops; and harvesting that insures the smallest possible loss.

The estimated yields reflect the productive capacity of each soil for each of the principal crops. Yields are likely to increase as new production technology is developed. The productivity of a given soil compared with that of other soils, however, is not likely to change.

Crops other than those shown in table 5 are grown in the survey area, but estimated yields are not listed because the acreage of such crops is small. The local office of the Soil Conservation Service or of the Cooperative Extension Service can provide information about the management and productivity of the soils for those crops.

Land Capability Classification

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The grouping does not take into account major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor does it consider possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for rangeland, for woodland, and for engineering purposes.

In the capability system, soils are generally grouped at three levels: capability class, subclass, and unit. Only class and subclass are used in this survey. These levels are defined in the following paragraphs.

Capability classes, the broadest groups, are designated by Roman numerals I through VIII. The numerals indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class I soils have few limitations that restrict their use.

Class II soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices.

Class III soils have severe limitations that reduce the choice of plants or that require special conservation practices, or both.

Class IV soils have very severe limitations that reduce the choice of plants or that require very careful management, or both.

Class V soils are not likely to erode but have other limitations, impractical to remove, that limit their use.

Class VI soils have severe limitations that make them generally unsuitable for cultivation.

Class VII soils have very severe limitations that make them unsuitable for cultivation.

Class VIII soils and miscellaneous areas have limitations that nearly preclude their use for commercial crop production.

Capability subclasses are soil groups within one class. They are designated by adding a small letter, *e, w, s,* or *c,* to the class numeral, for example, IIe. The letter *e* shows that the main limitation is risk of erosion unless close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c*, used in only some parts of the United States, shows that the chief limitation is climate that is very cold or very dry.

In class I there are no subclasses because the soils of this class have few limitations. Class V contains only the subclasses indicated by *w, s,* or *c* because the soils in class V are subject to little or no erosion. They have other limitations that restrict their use to pasture, rangeland, woodland, wildlife habitat, or recreation.

The acreage of soils in each capability class and subclass is shown in table 6. The capability classification of each map unit is given in table 5 and the section "Detailed Soil Map Units."

Woodland Management and Productivity

William A. Hannaford, forester, Soil Conservation Service, helped to prepare this section *(12, 13, 14, 16, 17).*

Approximately 196,000 acres, or 73 percent, of Choctaw County is commercial forest. Commercial forest is land that is producing or is capable of producing industrial wood crops and is not withdrawn from such use. The commercial forest is owned as follows: 84,000 acres by miscellaneous private owners, 44,800 acres by forest industry, 51,800 acres by farmers, 4,400 acres in public ownership, and 11,000 acres in Tombigbee National Forest.

In 1977, the forests of Choctaw County supported a total of 696.4 million board feet of sawtimber. Of this, 557.8 million feet was softwoods, primarily pine, and 138.6 million feet was hardwoods. There was 3,122,000 cords of growing stock. This included 1,941,000 cords of softwoods, primarily pine, and 1,181,000 cords of

hardwoods. The hardwoods consisted of 751,000 cords of oak, 239,000 cords of gum, and 191,000 cords of other species.

Choctaw County's commercial forest and the harvested tree crops support a substantial timber industry in northeast and east-central Mississippi, including several wood-product companies in the county itself. The protection, management, harvesting, and logging operations in the forest, together with the processing, transportation, and merchandising of wood products, provide employment for many residents.

In 1982, the two small portable sawmills operating in Choctaw County had an annual output of less than three million board feet. There were two plants which manufactured pallets, using upland hardwoods such as oak and hickory, and about eight logging operators and five pulpwood dealers *(6, 8).*

The forest of Choctaw County provides food and shelter for wildlife and offers opportunities for many forms of outdoor recreation. Moreover, this forest land provides watershed protection, reduces soil erosion and sedimentation, enhances the quality and value of water resources, and furnishes a limited amount of native forage for domestic livestock.

Trees can be planted to screen distracting views of dumps and other unsightly areas, muffle sounds of traffic, reduce the force of winds, and lend beauty to the landscape. Spring blossoms and fall foliage are beautiful, and trees produce fruits and nuts for use by people as well as by wildlife. Forests filter dust and other impurities from the air, convert carbon dioxide into oxygen, and provide shade from the sun.

Forest types are stands of similar character, composed of the same species and growing under the same ecological and biological conditions. Forest types are distinct communities and require separate management and treatment. Types are based on species composition, site quality, and age. These forest types are named for the kinds of trees that are present in the greatest number *(7, 11).*

The *loblolly-shortleaf pine* forest type is the most important in this county. Fifty percent or more of the stand is loblolly or shortleaf pine. Common associate species include oak, hickory, and gum. In 1977, the loblolly-shortleaf pine forest type covered about 72,800 acres in Choctaw County.

The *oak-pine* forest type ranks second in importance. This type is 50 percent or more hardwoods, usually upland oaks, and 25 to 49 percent pines. Common associates include sweetgum, black tupelo, hickory, and yellow-poplar. In 1977, the oak-pine forest type covered about 56,000 acres.

The *oak-hickory* forest type is 50 percent or more upland oaks and hickory and less than 25 percent pines. Common associates include yellow-poplar, elms, maple, and black walnut. In 1977, this forest type covered about 44,800 acres in Choctaw County.

The *oak-gum-cypress* forest type includes bottomland forest in which 50 percent or more of the stand is water tupelo, blackgum, sweetgum, oaks, or cypress, singly or in combination, and less than 25 percent is pines. Common associates include cottonwood, willow, ash, elm, hackberry, and maple. As of 1977, the oak-gum-cypress forest type covered about 22,400 acres. During the 1960's and 1970's, much of the bottomland forest in Choctaw County was converted to cropland and pasture. The remaining acreage of this type is on the bottomlands of the Big Black and Yockanookany Rivers and their tributaries.

The loblolly-shortleaf pine, oak-hickory, and oak-pine forests are on lower to upper side slopes and ridges throughout the county. The oak-hickory forest and the oak part of oak-pine forests are on uplands.

Individual species can be ranked in terms of importance, based on volume of growing stock and of sawtimber, distribution, and acreage. Loblolly pine is the most important species in this area, followed by shortleaf pine, white oak, red oak, hickory, sweetgum, elm and sugarberry combined, ash, water tupelo, blackgum, yellow-poplar, and red maple and sycamore.

Table 7 can be used by woodland owners or forest managers in planning the use of soils for wood crops. Only those soils suitable for wood crops are listed. The table lists the ordination (woodland suitability) symbol for each soil. Soils assigned the same ordination symbol require the same general management and have about the same potential productivity.

The first part of the *ordination symbol*, a number, indicates the potential productivity of the soils for important trees. The number 1 indicates very high productivity; 2, high; 3, moderately high; 4, moderate; and 5, low. The second part of the symbol, a letter, indicates the major kind of soil limitation. The letter *w*, indicates excessive water in or on the soil and *c* indicates clay in the upper part of the soil. The letter *o* indicates that limitations or restrictions are insignificant.

In table 7, *slight, moderate,* and *severe* indicate the degree of the major soil limitations to be considered in management.

Ratings of the *erosion hazard* indicate the risk of loss of soil in well managed woodland. The risk is *slight* if the expected soil loss is small, *moderate* if measures are needed to control erosion during logging and road construction, and *severe* if intensive management or special equipment and methods are needed to prevent excessive loss of soil.

Ratings of *equipment limitation* reflect the characteristics and conditions of the soil that restrict use of the equipment generally needed in woodland management or harvesting. A rating of *slight* indicates that use of equipment is not limited to a particular kind of equipment or time of year; *moderate* indicates a short seasonal limitation or a need for some modification in

management or in equipment; and *severe* indicates a seasonal limitation, a need for special equipment or management, or a hazard in the use of equipment.

Seedling mortality ratings indicate the degree to which the soil affects the mortality of tree seedlings. Plant competition is not considered in the ratings. The ratings apply to seedlings from good stock that are properly planted during a period of sufficient rainfall. A rating of *slight* indicates that the expected mortality is less than 25 percent; *moderate*, 25 to 50 percent; and *severe*, more than 50 percent.

Ratings of *plant competition* indicate the degree to which undesirable plants are expected to invade where there are openings in the tree canopy. The invading plants compete with native plants or planted seedlings. A rating of *slight* indicates little or no competition from other plants; *moderate* indicates that plant competition is expected to hinder the development of a fully stocked stand of desirable trees; *severe* indicates that plant competition is expected to prevent the establishment of a desirable stand unless the site is intensively prepared, weeded, or otherwise managed to control undesirable plants.

The *potential productivity* of merchantable or *common trees* on a soil is expressed as a *site index*. This index is the average height, in feet, that dominant and codominant trees of a given species attain in a specified number of years. The site index applies to fully stocked, even-aged, unmanaged stands. Commonly grown trees are those that woodland managers generally favor in intermediate or improvement cuttings. They are selected on the basis of growth rate, quality, value, and marketability.

Trees to plant are those that are suited to the soils and to commercial wood production.

Woodland Understory Vegetation

David W. Sanders, grassland conservationist, Soil Conservation Service, helped to prepare this section.

Understory vegetation consists of grasses, forbs, shrubs, and other plants. Some woodland, if well managed, can produce enough understory vegetation to support grazing of livestock or wildlife, or both, without damage to the trees.

The quantity and quality of understory vegetation vary with the kind of soil, the age and kind of trees in the canopy, the density of the canopy, and the depth and condition of the litter. The density of the canopy determines the amount of light that understory plants receive.

Table 8 shows, for each soil suitable for woodland use, the potential for producing understory vegetation. The total production of understory vegetation includes the herbaceous plants and the leaves, twigs, and fruit of woody plants up to a height of 4 1/2 feet. It is expressed in pounds per acre of air-dry vegetation in normal years. In a normal year, soil moisture is average during the optimum part of the growing season.

Table 8 also lists the common names of the characteristic vegetation on each soil and the percentage composition, by air-dry weight, of each kind of plant. The table shows the kind and percentage of understory plants expected under a canopy density that is most nearly typical of woodland in which the production of wood crops is highest.

Recreation

E. E. Dorrill III, landscape architect, Soil Conservation Service, helped to prepare this section.

The soils of the survey area are rated in table 9 according to limitations that affect their suitability for recreation. The ratings are based on restrictive soil features, such as wetness, slope, and texture of the surface layer. Susceptibility to flooding is considered. Not considered in the ratings, but important in evaluating a site, are the location and accessibility of the area, the size and shape of the area and its scenic quality, vegetation, access to water, potential water impoundment sites, (fig. 6), and access to public sewerlines. The capacity of the soil to absorb septic tank effluent and the ability of the soil to support vegetation are also important. Soils subject to flooding are limited for recreation use by the duration and intensity of flooding and the season when flooding occurs. In planning recreation facilities, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

In table 9, the degree of soil limitation is expressed as slight, moderate, or severe. *Slight* means that soil properties are generally favorable and that limitations are minor and easily overcome. *Moderate* means that limitations can be overcome or alleviated by planning, design, or special maintenance. *Severe* means that soil properties are unfavorable and that limitations can be offset only by costly soil reclamation, special design, intensive maintenance, limited use, or by a combination of these measures.

The information in table 9 can be supplemented by other information in this survey, for example, interpretations for septic tank absorption fields in table 12 and interpretations for dwellings without basements and for local roads and streets in table 11.

Camp areas require site preparation such as shaping and leveling the tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The best soils have mild slopes and are not wet or subject to flooding during the period of use. The surface has few or no stones or boulders, absorbs rainfall readily but remains firm, and is not dusty when dry. Strong slopes

Figure 6.—Choctaw Lake, the largest body of water in the area, is used for recreation. Smithdale-Maben association, hilly.

and stones or boulders can greatly increase the cost of constructing campsites.

Picnic areas are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The best soils for picnic areas are firm when wet, are not dusty when dry, are not subject to flooding during the period of use, and do not have slopes or stones or boulders that increase the cost of shaping sites or of building access roads and parking areas.

Playgrounds require soils that can withstand intensive foot traffic. The best soils are almost level and are not wet or subject to flooding during the season of use. The surface is free of stones and boulders, is firm after rains, and is not dusty when dry. If grading is needed, the depth of the soil over bedrock or a hardpan should be considered.

Paths and trails for hiking and horseback riding should require little or no cutting and filling. The best soils are not wet, are firm after rains, are not dusty when dry, and are not subject to flooding more than once a year during the period of use. They have moderate slopes and few or no stones or boulders on the surface.

Golf fairways are subject to heavy foot traffic and some light vehicular traffic. Cutting or filling may be required. The best soils for use as golf fairways are firm when wet, are not dusty when dry, and are not subject to prolonged flooding during the period of use. They have moderate slopes and no stones or boulders on the surface. The suitability of the soil for tees or greens is not considered in rating the soils.

Wildlife Habitat

Harvey G. Huffstatler, biologist, Soil Conservation Service, helped to prepare this section.

Choctaw County has abundant and varied wildlife. There are large populations of deer and turkey. Squirrel, dove, quail, and rabbit are abundant in the forests, field edges, and open lands. Nongame birds and other animals are also common. The many ponds and small lakes in the county provide excellent fishing. Bass, catfish, redear, and bluegill are routinely stocked in these waters. There is no significant stream fishery. Furbearers such as beaver, mink, muskrat, raccoon, and opossum are found along the streams and in the wetlands. Beavers have created many acres of quality wetland habitat in Choctaw County.

Soils affect the kind and amount of vegetation that is available to wildlife as food and cover. They also affect the construction of water impoundments. The kind and abundance of wildlife depend largely on the amount and distribution of food, cover, and water. Wildlife habitat can be created or improved by planting appropriate vegetation, by maintaining the existing plant cover, or by promoting the natural establishment of desirable plants.

In table 10, the soils in the survey area are rated according to their potential for providing habitat for various kinds of wildlife. This information can be used in planning parks, wildlife refuges, nature study areas; in planning wildlife enhancement on private land; in selecting soils that are suitable for establishing, improving, or maintaining specific elements of wildlife habitat; and in determining the intensity of management needed for each element of the habitat.

The potential of the soil is rated good, fair, poor, or very poor. A rating of *good* indicates that the element or kind of habitat is easily established, improved, or maintained. Few or no limitations affect management, and satisfactory results can be expected. A rating of *fair* indicates that the element or kind of habitat can be established, improved, or maintained in most places. Moderately intensive management is required for satisfactory results. A rating of *poor* indicates that limitations are severe for the designated element or kind of habitat. Habitat can be created, improved, or maintained in most places, but management is difficult and must be intensive. A rating of *very poor* indicates that restrictions for the element or kind of habitat are very severe and that unsatisfactory results can be expected. Creating, improving, or maintaining habitat is impractical or impossible.

The elements of wildlife habitat are described in the following paragraphs.

Grain and seed crops are domestic grains and seed-producing herbaceous plants. Soil properties and features that affect the growth of grain and seed crops are depth of the root zone, texture of the surface layer, available water capacity, wetness, slope, surface stoniness, and flood hazard. Soil temperature and soil moisture are also considerations. Examples of grain and seed crops are corn, wheat, oats, grain sorghum, and soybeans.

Grasses and legumes are domestic perennial grasses and herbaceous legumes. Soil properties and features that affect the growth of grasses and legumes are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, flood hazard, and slope. Soil temperature and soil moisture are also considerations. Examples of grasses and legumes are fescue, lespedeza, bahiagrass, and clover.

Wild herbaceous plants are native or naturally established grasses and forbs, including weeds. Soil properties and features that affect the growth of these plants are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, and flood hazard. Soil temperature and soil moisture are also considerations. Examples of wild herbaceous plants are bluestem, panicgrass, beggarweed, partridgepea, and ragweed.

Hardwood trees and woody understory produce nuts or other fruit, buds, catkins, twigs, bark, and foliage. Soil properties and features that affect the growth of hardwood trees and shrubs are depth of the root zone, the available water capacity, and wetness. Examples of these plants are oak, poplar, cherry, sweetgum, maple, hawthorn, dogwood, and hickory. Examples of fruit-producing shrubs that are suitable for planting on soils rated *good* are autumn-olive and crabapple.

Coniferous plants furnish browse and seeds. Soil properties and features that affect the growth of coniferous trees, shrubs, and ground cover are depth of the root zone, available water capacity, and wetness. Examples of coniferous plants are pine and red cedar.

Wetland plants are annual and perennial wild herbaceous plants that grow on moist or wet sites. Submerged or floating aquatic plants are excluded. Soil properties and features affecting wetland plants are texture of the surface layer, wetness, reaction, salinity, slope, and surface stoniness. Examples of wetland plants are smartweed, wild millet, rushes, and sedges.

Shallow water areas have an average depth of less than 5 feet. Some are naturally wet areas. Others are created by dams, levees, or other water-control structures. Soil properties and features affecting shallow water areas are depth to bedrock, wetness, surface stoniness, slope, and permeability. Examples of shallow water areas are beaver ponds, waterfowl feeding impoundments, and ponds.

The habitat for various kinds of wildlife is described in the following paragraphs.

Habitat for openland wildlife consists of cropland, pasture, meadows, and areas that are overgrown with grasses, herbs, shrubs, and vines. These areas produce grain and seed crops, grasses and legumes, and wild herbaceous plants. The wildlife attracted to these areas include bobwhite quail, dove, meadowlark, field sparrow, cottontail, hawks, and red fox.

Habitat for woodland wildlife consists of areas of deciduous plants or coniferous plants or both and associated grasses, legumes, and wild herbaceous plants. Wildlife attracted to these areas include wild turkey, woodcock, owls, woodpeckers, squirrels, gray fox, raccoon, deer, and bobcat.

Habitat for wetland wildlife consists of open, marshy or swampy shallow water areas. Some of the wildlife attracted to such areas are fish, waterfowl, herons, muskrat, mink, and beaver.

Engineering

Bobby F. Pierce, agricultural engineer, Soil Conservation Service, helped to prepare this section.

This section provides information for planning land uses related to urban development and to water management. Soils are rated for various uses, and the most limiting features are identified. The ratings are given in the following tables: Building site development, Sanitary facilities, Construction materials, and Water management. The ratings are based on observed performance of the soils and on the estimated data and test data in the "Soil Properties" section.

Information in this section is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil within a depth of 5 or 6 feet. Because of the map scale, small areas of different soils may be included within the mapped areas of a specific soil.

The information is not site specific and does not eliminate the need for onsite investigation of the soils or for testing and analysis by personnel experienced in the design and construction of engineering works.

Government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information in this section. Local ordinances and regulations need to be considered in planning, in site selection, and in design.

Soil properties, site features, and observed performance were considered in determining the ratings in this section. During the fieldwork for this soil survey, determinations were made about grain-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock within 5 to 6 feet of the surface, soil wetness, depth to a seasonal high water table, slope, likelihood of flooding, natural soil structure aggregation, and soil density. Data were collected about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kind of adsorbed cations. Estimates were made for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, and other behavioral characteristics affecting engineering uses.

This information can be used to (1) evaluate the potential of areas for residential, commercial, industrial, and recreation uses; (2) make preliminary estimates of construction conditions; (3) evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; (4) evaluate alternative sites for sanitary landfills, septic tank absorption fields, and sewage lagoons; (5) plan detailed onsite investigations of soils and geology; (6) locate potential sources of gravel, sand, earthfill, and topsoil; (7) plan drainage systems, irrigation systems, ponds, terraces, and other structures for soil and water conservation; and (8) predict performance of proposed small structures and pavements by comparing the performance of existing similar structures on the same or similar soils.

The information in the tables, along with the soil maps, the soil descriptions, and other data provided in this survey can be used to make additional interpretations.

Some of the terms used in this soil survey have a special meaning in soil science and are defined in the Glossary.

Building Site Development

Table 11 shows the degree and kind of soil limitations that affect shallow excavations, dwellings without basements, small commercial buildings, local roads and streets, and lawns and landscaping. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required. Special feasibility studies may be required where the soil limitations are severe.

Shallow excavations are trenches or holes dug to a maximum depth of 5 or 6 feet for basements, graves, utility lines, open ditches, and other purposes. The ratings are based on soil properties, site features, and observed performance of the soils. The ease of digging, filling, and compacting is affected by the depth to bedrock, a cemented pan, or a very firm dense layer; stone content; soil texture; and slope. The time of the year that excavations can be made is affected by the depth to a seasonal high water table and the susceptibility of the soil to flooding. The resistance of the excavation walls or banks to sloughing or caving is affected by soil texture and the depth to the water table.

Dwellings and small commercial buildings are structures built on shallow foundations on undisturbed soil. The load limit is the same as that for single-family dwellings no higher than three stories. Ratings are made for small commercial buildings without basements and for dwellings without basements. The ratings are based on soil properties, site features, and observed performance of the soils. A high water table, flooding, shrink-swell potential, and organic layers can cause the movement of footings. A high water table, depth to bedrock or to a cemented pan, large stones, and flooding affect the ease of excavation and construction. Landscaping and grading that require cuts and fills of more than 5 to 6 feet are not considered.

Local roads and streets have an all-weather surface and carry automobile and light truck traffic all year. They

have a subgrade of cut or fill soil material, a base of gravel, crushed rock, or stabilized soil material, and a flexible or rigid surface. Cuts and fills are generally limited to less than 6 feet. The ratings are based on soil properties, site features, and observed performance of the soils. Depth to bedrock or to a cemented pan, a high water table, flooding, large stones, and slope affect the ease of excavating and grading. Soil strength (as inferred from the engineering classification of the soil), shrink-swell potential, frost action potential, and depth to a high water table affect the traffic supporting capacity.

Lawns and landscaping require soils on which turf and ornamental trees and shrubs can be established and maintained. The ratings are based on soil properties, site features, and observed performance of the soils. Soil reaction, a high water table, depth to bedrock or to a cemented pan, the available water capacity in the upper 40 inches, and the content of salts, sodium, and sulfidic materials affect plant growth. Flooding, wetness, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer affect trafficability after vegetation is established.

Sanitary Facilities

Table 12 shows the degree and the kind of soil limitations that affect septic tank absorption fields, sewage lagoons, and sanitary landfills. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required.

Table 12 also shows the suitability of the soils for use as daily cover for landfills. A rating of *good* indicates that soil properties and site features are favorable for the use and good performance and low maintenance can be expected; *fair* indicates that soil properties and site features are moderately favorable for the use and one or more soil properties or site features make the soil less desirable than the soils rated good; and *poor* indicates that one or more soil properties or site features are unfavorable for the use and overcoming the unfavorable properties requires special design, extra maintenance, or costly alteration.

Septic tank absorption fields are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 72 inches is evaluated. The ratings are based on soil properties, site features, and observed performance of the soils. Permeability, a high water table, depth to bedrock or to a cemented pan, and flooding affect absorption of the effluent. Large stones and bedrock or a cemented pan interfere with installation.

Unsatisfactory performance of septic tank absorption fields, including excessively slow absorption of effluent, surfacing of effluent, and hillside seepage, can affect public health. Ground water can be polluted if highly permeable sand and gravel or fractured bedrock is less than 4 feet below the base of the absorption field, if slope is excessive, or if the water table is near the surface. There must be unsaturated soil material beneath the absorption field to filter the effluent effectively. Many local ordinances require that this material be of a certain thickness.

Sewage lagoons are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons should have a nearly level floor surrounded by cut slopes or embankments of compacted soil. Lagoons generally are designed to hold the sewage within a depth of 2 to 5 feet. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water.

Table 12 gives ratings for the natural soil that makes up the lagoon floor. The surface layer and, generally, 1 or 2 feet of soil material below the surface layer are excavated to provide material for the embankments. The ratings are based on soil properties, site features, and observed performance of the soils. Considered in the ratings are slope, permeability, a high water table, depth to bedrock or to a cemented pan, flooding, large stones, and content of organic matter.

Excessive seepage due to rapid permeability of the soil or a water table that is high enough to raise the level of sewage in the lagoon causes a lagoon to function unsatisfactorily. Pollution results if seepage is excessive or if floodwater overtops the lagoon. A high content of organic matter is detrimental to proper functioning of the lagoon because it inhibits aerobic activity. Slope, bedrock, and cemented pans can cause construction problems, and large stones can hinder compaction of the lagoon floor.

Sanitary landfills are areas where solid waste is disposed of by burying it in soil. There are two types of landfill—trench and area. In a trench landfill, the waste is placed in a trench. It is spread, compacted, and covered daily with a thin layer of soil excavated at the site. In an area landfill, the waste is placed in successive layers on the surface of the soil. The waste is spread, compacted, and covered daily with a thin layer of soil from a source away from the site.

Both types of landfill must be able to bear heavy vehicular traffic. Both types involve a risk of ground water pollution. Ease of excavation and revegetation needs to be considered.

The ratings in table 12 are based on soil properties, site features, and observed performance of the soils. Permeability, depth to bedrock or to a cemented pan, a

high water table, slope, and flooding affect both types of landfill. Texture, stones and boulders, highly organic layers, soil reaction, and content of salts and sodium affect trench type landfills. Unless otherwise stated, the ratings apply only to that part of the soil within a depth of about 6 feet. For deeper trenches, a limitation rated slight or moderate may not be valid. Onsite investigation is needed.

Daily cover for landfill is the soil material that is used to cover compacted solid waste in an area type sanitary landfill. The soil material is obtained offsite, transported to the landfill, and spread over the waste.

Soil texture, wetness, coarse fragments, and slope affect the ease of removing and spreading the material during wet and dry periods. Loamy or silty soils that are free of large stones or excess gravel are the best cover for a landfill. Clayey soils are sticky or cloddy and are difficult to spread; sandy soils are subject to soil blowing.

After soil material has been removed, the soil material remaining in the borrow area must be thick enough over bedrock, a cemented pan, or the water table to permit revegetation. The soil material used as final cover for a landfill should be suitable for plants. The surface layer generally has the best workability, more organic matter, and the best potential for plants. Material from the surface layer should be stockpiled for use as the final cover.

Construction Materials

Table 13 gives information about the soils as a source of roadfill, sand, gravel, and topsoil. The soils are rated *good, fair,* or *poor* as a source of roadfill and topsoil. They are rated as a probable or improbable source of sand and gravel. The ratings are based on soil properties and site features that affect the removal of the soil and its use as construction material. Normal compaction, minor processing, and other standard construction practices are assumed. Each soil is evaluated to a depth of 5 or 6 feet.

Roadfill is soil material that is excavated in one place and used in road embankments in another place. In this table, the soils are rated as a source of roadfill for low embankments, generally less than 6 feet high and less exacting in design than higher embankments.

The ratings are for the soil material below the surface layer to a depth of 5 or 6 feet. It is assumed that soil layers will be mixed during excavating and spreading. Many soils have layers of contrasting suitability within their profile. The table showing engineering index properties provides detailed information about each soil layer. This information can help determine the suitability of each layer for use as roadfill. The performance of soil after it is stabilized with lime or cement is not considered in the ratings.

The ratings are based on soil properties, site features, and observed performance of the soils. The thickness of suitable material is a major consideration. The ease of excavation is affected by large stones, a high water table, and slope. How well the soil performs in place after it has been compacted and drained is determined by its strength (as inferred from the engineering classification of the soil) and shrink-swell potential.

Soils rated *good* contain significant amounts of sand or gravel or both. They have at least 5 feet of suitable material, low shrink-swell potential, few cobbles and stones, and slopes of 15 percent or less. Depth to the water table is more than 3 feet. Soils rated *fair* are more than 35 percent silt- and clay-sized particles and have a plasticity index of less than 10. They have moderate shrink-swell potential, slopes of 15 to 25 percent, or many stones. Depth to the water table is 1 to 3 feet. Soils rated *poor* have a plasticity index of more than 10, a high shrink-swell potential, many stones, or slopes of more than 25 percent. They are wet, and the depth to the water table is less than 1 foot. They may have layers of suitable material, but the material is less than 3 feet thick.

Sand and gravel are natural aggregates suitable for commercial use with a minimum of processing. Sand and gravel are used in many kinds of construction. Specifications for each use vary widely. In table 13, only the probability of finding material in suitable quantity is evaluated. The suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material.

The properties used to evaluate the soil as a source of sand or gravel are gradation of grain sizes (as indicated by the engineering classification of the soil), the thickness of suitable material, and the content of rock fragments. Kinds of rock, acidity, and stratification are given in the soil series descriptions. Gradation of grain sizes is given in the table on engineering index properties.

A soil rated as a probable source has a layer of clean sand or gravel or a layer of sand or gravel that is up to 12 percent silty fines. This material must be at least 3 feet thick and less than 50 percent, by weight, large stones. All other soils are rated as an improbable source. Coarse fragments of soft bedrock, such as shale and siltstone, are not considered to be sand and gravel.

Topsoil is used to cover an area so that vegetation can be established and maintained. The upper 40 inches of a soil is evaluated for use as topsoil. Also evaluated is the reclamation potential of the borrow area.

Plant growth is affected by toxic material and by such properties as soil reaction, available water capacity, and fertility. The ease of excavating, loading, and spreading is affected by rock fragments, slope, a water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope, a water table, rock fragments, bedrock, and toxic material.

Soils rated *good* have friable loamy material to a depth of at least 40 inches. They are free of stones and cobbles, have little or no gravel, and have slopes of less

than 8 percent. They are low in content of soluble salts, are naturally fertile or respond well to fertilizer, and are not so wet that excavation is difficult.

Soils rated *fair* are sandy soils, loamy soils that have a relatively high content of clay, soils that have only 20 to 40 inches of suitable material, soils that have an appreciable amount of gravel, stones, or soluble salts, or soils that have slopes of 8 to 15 percent. The soils are not so wet that excavation is difficult.

Soils rated *poor* are very sandy or clayey, have less than 20 inches of suitable material, have a large amount of gravel, stones, or soluble salts, have slopes of more than 15 percent, or have a seasonal water table at or near the surface.

The surface layer of most soils is generally preferred for topsoil because of its organic matter content. Organic matter greatly increases the absorption and retention of moisture and nutrients for plant growth.

Water Management

Table 14 gives information on the soil properties and site features that affect water management. The degree and kind of soil limitations are given for pond reservoir areas; embankments, dikes, and levees; and aquifer-fed ponds. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and are easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increase in construction costs, and possibly increased maintenance are required.

This table also gives for each soil the restrictive features that affect drainage, terraces and diversions, and grassed waterways.

Pond reservoir areas hold water behind a dam or embankment. Soils best suited to this use have low seepage potential in the upper 60 inches. The seepage potential is determined by the permeability of the soil and the depth to fractured bedrock or other permeable material. Excessive slope can affect the storage capacity of the reservoir area.

Embankments, dikes, and levees are raised structures of soil material, generally less than 20 feet high, constructed to impound water or to protect land against overflow. In this table, the soils are rated as a source of material for embankment fill. The ratings apply to the soil material below the surface layer to a depth of about 5 feet. It is assumed that soil layers will be uniformly mixed and compacted during construction.

The ratings do not indicate the ability of the natural soil to support an embankment. Soil properties to a depth even greater than the height of the embankment can affect performance and safety of the embankment. Generally, deeper onsite investigation is needed to determine these properties.

Soil material in embankments must be resistant to seepage, piping, and erosion and have favorable compaction characteristics. Unfavorable features include less than 5 feet of suitable material and a high content of stones or boulders, organic matter, or salts or sodium. A high water table affects the amount of usable material. It also affects trafficability.

Aquifer-fed excavated ponds are pits or dugouts that extend to a ground-water aquifer or to a depth below a permanent water table. Excluded are ponds that are fed only by surface runoff and embankment ponds that impound water 3 feet or more above the original surface. Excavated ponds are affected by depth to a permanent water table, permeability of the aquifer, and quality of the water as inferred from the salinity of the soil. Depth to bedrock and the content of large stones affect the ease of excavation.

Drainage is the removal of excess surface and subsurface water from the soil. How easily and effectively the soil is drained depends on the depth to bedrock, to a cemented pan, or to other layers that affect the rate of water movement; permeability; depth to a high water table or depth of standing water if the soil is subject to ponding; slope; susceptibility to flooding; subsidence of organic layers; and potential frost action. Excavating and grading and the stability of ditchbanks are affected by depth to bedrock or to a cemented pan, large stones, slope, and the hazard of cutbanks caving. The productivity of the soil after drainage is adversely affected by extreme acidity or by toxic substances in the root zone, such as salts, sodium, or sulfur. Availability of drainage outlets is not considered in the ratings.

Terraces and diversions are embankments or a combination of channels and ridges constructed across a slope to reduce erosion and conserve moisture by intercepting runoff. Slope, wetness, large stones, and depth to bedrock or to a cemented pan affect the construction of terraces and diversions. A restricted rooting depth, a severe hazard of wind or water erosion, an excessively coarse texture, and restricted permeability adversely affect maintenance.

Grassed waterways are natural or constructed channels, generally broad and shallow, that conduct surface water to outlets at a nonerosive velocity. Large stones, wetness, slope, and depth to bedrock or to a cemented pan affect the construction of grassed waterways. A hazard of wind erosion, low available water capacity, restricted rooting depth, toxic substances such as salts or sodium, and restricted permeability adversely affect the growth and maintenance of the grass after construction.

Soil Properties

Data relating to soil properties are collected during the course of the soil survey. The data and the estimates of soil and water features, listed in tables, are explained on the following pages.

Soil properties are determined by field examination of the soils and by laboratory index testing of some benchmark soils. Established standard procedures are followed. During the survey, many shallow borings are made and examined to identify and classify the soils and to delineate them on the soil maps. Samples are taken from some typical profiles and tested in the laboratory to determine grain-size distribution, plasticity, and compaction characteristics.

Estimates of soil properties are based on field examinations, on laboratory tests of samples from the survey area, and on laboratory tests of samples of similar soils in nearby areas. Tests verify field observations, verify properties that cannot be estimated accurately by field observation, and help characterize key soils.

The estimates of soil properties shown in the tables include the range of grain-size distribution and Atterberg limits, the engineering classifications, and the physical and chemical properties of the major layers of each soil. Pertinent soil and water features also are given.

Engineering Index Properties

Table 15 gives estimates of the engineering classification and of the range of index properties for the major layers of each soil in the survey area. Most soils have layers of contrasting properties within the upper 5 or 6 feet.

Depth to the upper and lower boundaries of each layer is indicated. The range in depth and information on other properties of each layer are given for each soil series under "Soil Series and Their Morphology."

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is as much as 15 percent, an appropriate modifier is added, for example, "gravelly." Textural terms are defined in the Glossary.

Classification of the soils is determined according to the Unified soil classification system *(2)* and the system adopted by the American Association of State Highway and Transportation Officials *(1)*.

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to grain-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, SP-SM.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of grain-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group index number. Group index numbers range from 0 for the best subgrade material to 20 or higher for the poorest.

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an ovendry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

Liquid limit and *plasticity index* (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination.

The estimates of grain-size distribution, liquid limit, and plasticity index are rounded to the nearest 5 percent. Thus, if the ranges of gradation and Atterberg limits

extend a marginal amount (1 or 2 percentage points) across classification boundaries, the classification in the marginal zone is omitted in the table.

Physical and Chemical Properties

Table 16 shows estimates of some characteristics and features that affect soil behavior. These estimates are given for the major layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In this table, the estimated clay content of each major soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The amount and kind of clay greatly affect the fertility and physical condition of the soil. They determine the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, permeability, and plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earth-moving operations.

Moist bulk density is the weight of soil (ovendry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at 1/3 bar moisture tension. Weight is determined after drying the soil at 105 degrees C. In this table, the estimated moist bulk density of each major soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. A bulk density of more than 1.6 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Permeability refers to the ability of a soil to transmit water or air. The estimates indicate the rate of downward movement of water when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems, septic tank absorption fields, and construction where the rate of water movement under saturated conditions affects behavior.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in inches of water per inch of soil for each major soil layer. The capacity varies, depending on soil properties that affect the retention of water and the depth of the root zone. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Soil reaction is a measure of acidity or alkalinity and is expressed as a range in pH values. The range in pH of each major horizon is based on many field tests. For many soils, values have been verified by laboratory analyses. Soil reaction is important in selecting crops and other plants, in evaluating soil amendments for fertility and stabilization, and in determining the risk of corrosion.

Shrink-swell potential is the potential for volume change in a soil with a loss or gain in moisture. Volume change occurs mainly because of the interaction of clay minerals with water and varies with the amount and type of clay minerals in the soil. The size of the load on the soil and the magnitude of the change in soil moisture content influence the amount of swelling of soils in place. Laboratory measurements of swelling of undisturbed clods were made for many soils. For others, swelling was estimated on the basis of the kind and amount of clay minerals in the soil and on measurements of similar soils.

If the shrink-swell potential is rated moderate to very high, shrinking and swelling can cause damage to buildings, roads, and other structures. Special design is often needed.

Shrink-swell potential classes are based on the change in length of an unconfined clod as moisture content is increased from air-dry to field capacity. The change is based on the soil fraction less than 2 millimeters in diameter. The classes are *low*, a change of less than 3 percent; *moderate*, 3 to 6 percent; and *high*, more than 6 percent. *Very high*, greater than 9 percent, is sometimes used.

Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter (up to 4 percent) and on soil structure and permeability. Values of K range from 0.05 to 0.69. The higher the value the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor T is an estimate of the maximum average annual rate of soil erosion by wind or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

Organic matter is the plant and animal residue in the soil at various stages of decomposition.

In table 16, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of organic matter of a soil can be maintained or increased by returning crop residue to the soil. Organic matter affects the available water capacity,

infiltration rate, and tilth. It is a source of nitrogen and other nutrients for crops.

Soil and Water Features

Table 17 gives estimates of various soil and water features. The estimates are used in land use planning that involves engineering considerations.

Hydrologic soil groups are used to estimate runoff from precipitation. Soils not protected by vegetation are assigned to one of four groups. They are grouped according to the intake of water when the soils are thoroughly wet and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a permanent high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

Flooding, the temporary inundation of an area, is caused by overflowing streams, by runoff from adjacent slopes, or by tides. Water standing for short periods after rainfall or snowmelt is not considered flooding, nor is water in swamps and marshes.

Table 17 gives the frequency and duration of flooding and the time of year when flooding is most likely.

Frequency, duration, and probable dates of occurrence are estimated. Frequency is expressed as none, rare, common, occasional, and frequent. *None* means that flooding is not probable; *rare* that it is unlikely but possible under unusual weather conditions; *common* that it is likely under normal conditions; *occasional* that it occurs, on the average, no more than once in 2 years; and *frequent* that it occurs, on the average, more than once in 2 years. Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, and *long* if more than 7 days. Probable dates are expressed in months; November-May, for example, means that flooding can occur during the period November through May.

The information is based on evidence in the soil profile, namely thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and absence of distinctive horizons that form in soils that are not subject to flooding.

Also considered are local information about the extent and levels of flooding and the relation of each soil on the landscape to historic floods. Information on the extent of flooding based on soil data is less specific than that provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

High water table (seasonal) is the highest level of a saturated zone in the soil in most years. The depth to a seasonal high water table applies to undrained soils. The estimates are based mainly on the evidence of a saturated zone, namely grayish colors or mottles in the soil. Indicated in table 17 are the depth to the seasonal high water table; the kind of water table—that is, perched, artesian, or apparent; and the months of the year that the water table commonly is high. A water table that is seasonally high for less than 1 month is not indicated in table 17.

An *apparent* water table is a thick zone of free water in the soil. It is indicated by the level at which water stands in an uncased borehole after adequate time is allowed for adjustment in the surrounding soil. An *artesian* water table is under hydrostatic head, generally beneath an impermeable layer. When this layer is penetrated, the water level rises in an uncased borehole. A *perched* water table is water standing above an unsaturated zone. In places an upper, or perched, water table is separated from a lower one by a dry zone.

Only saturated zones within a depth of about 6 feet are indicated. A plus sign preceding the range in depth indicates that the water table is above the surface of the soil. The first numeral in the range indicates how high the water rises above the surface. The second numeral indicates the depth below the surface.

Risk of corrosion pertains to potential soil-induced electrochemical or chemical action that dissolves or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors creates a severe corrosion environment. The steel in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than steel in installations that are entirely within one kind of soil or within one soil layer.

For uncoated steel, the risk of corrosion, expressed as *low*, *moderate*, or *high*, is based on soil drainage class, total acidity, electrical resistivity near field capacity, and electrical conductivity of the saturation extract.

For concrete, the risk of corrosion is also expressed as *low*, *moderate*, or *high*. It is based on soil texture, acidity, and amount of sulfates in the saturation extract.

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories *(15)*. Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or from laboratory measurements. Table 18 shows the classification of the soils in the survey area. The categories are defined in the following paragraphs.

ORDER. Ten soil orders are recognized. The differences among orders reflect the dominant soil-forming processes and the degree of soil formation. Each order is identified by a word ending in *sol*. An example is Entisol.

SUBORDER. Each order is divided into suborders primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Aquent (*Aqu*, meaning water, plus *ent*, from Entisol).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Fluvaquents (*Fluv*, meaning on flood plains, plus *aquent*, the suborder of the Entisols that have an aquic moisture regime).

SUBGROUP. Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic is the central concept of the great group; it is not necessarily the most extensive. Intergrades are transitions to other orders, suborders, or great groups. Extragrades have some properties that are not representative of the great group but do not indicate transitions to any other known kind of soil. Each subgroup is identified by one or more adjectives preceding the name of the great group. The adjective *Typic* identifies the subgroup that typifies the great group. An example is Aeric Fluvaquents (*Aeric*, meaning better aerated than typical, plus the great group name).

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Mostly the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle-size class, mineral content, temperature regime, depth of the root zone, consistence, moisture equivalent, slope, and permanent cracks. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is fine-silty, mixed, acid, thermic Aeric Fluvaquents.

SERIES. The series consists of soils that have similar horizons in their profile. The horizons are similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile. The texture of the surface layer or of the substratum can differ within a series. The Arkabutla series consists of fine-silty, mixed, acid, thermic Aeric Fluvaquents.

Soil Series and Their Morphology

In this section, each soil series recognized in the survey area is described. The descriptions are arranged in alphabetic order.

Characteristics of the soil and the material in which it formed are identified for each series. The soil is compared with similar soils and with nearby soils of other series. A pedon, a small three-dimensional area of soil, that is typical of the series in the survey area is described. The detailed description of each soil horizon follows standards in the Soil Survey Manual *(10)*. Many of the technical terms used in the descriptions are defined in Soil Taxonomy *(15)*. Unless otherwise stated, colors in the descriptions are for moist soil. Following the pedon description is the range of important characteristics of the soils in the series.

The map units of each soil series are described in the section "Detailed Soil Map Units."

Ariel Series

The Ariel series consists of well drained soils that formed in silty alluvium on flood plains. Slope ranges from 0 to 2 percent. Ariel soils are coarse-silty, mixed, thermic Fluventic Dystrochrepts.

Ariel soils are associated with Arkabutla, Cascilla, Kirkville, and Oaklimeter soils. Arkabutla soils are in lower positions on the flood plains than the Ariel soils, and their B horizon has gray matrix colors at a depth of less than 20 inches. Arkabutla and Cascilla soils have

more clay in the upper part of the subsoil than Ariel soils. Kirkville and Oaklimeter soils are in slightly lower positions on the flood plains and have mottles with chroma of 2 above a depth of 20 inches.

Typical pedon of Ariel silt loam, occasionally flooded, approximately 0.8 mile northeast of Chester, along a paved road, 40 yards east of road; SW1/4SW1/4 sec. 2, T. 17 N., R. 10 E.

Ap—0 to 6 inches; dark grayish brown (10YR 4/2) silt loam; many medium distinct brown (10YR 5/3) mottles; weak fine granular structure; very friable; many fine roots; few black splotches and brownish root stains; strongly acid; abrupt smooth boundary.

Bw1—6 to 12 inches; dark yellowish brown (10YR 4/4) silt loam; common medium distinct brown (10YR 5/3) mottles; weak medium subangular blocky structure; friable; common fine roots; very strongly acid; clear smooth boundary.

Bw2—12 to 25 inches; dark yellowish brown (10YR 4/4) silt loam; weak medium subangular blocky structure; friable; few fine roots; very strongly acid; clear smooth boundary.

Bw3—25 to 37 inches; dark yellowish brown (10YR 4/4) silt loam; common medium distinct brown (10YR 5/3) mottles; weak medium subangular blocky structure; friable; very strongly acid; clear smooth boundary.

Eb—37 to 47 inches; mottled dark brown (10YR 4/3), yellowish brown (10YR 5/6), and light gray (10YR 7/1) silt loam; weak medium subangular blocky structure; friable; common fine pores; few fine black and yellowish brown concretions; very strongly acid; clear smooth boundary.

Bxb—47 to 63 inches; mottled dark brown (10YR 4/3), yellowish brown (10YR 5/6), and light gray (10YR 7/1) loam; weak coarse prismatic structure parting to weak medium subangular blocky; friable, slightly compact, brittle; few fine voids; common medium black and yellowish brown concretions; few tongues of gray silt between prisms; very strongly acid.

The solum is more than 60 inches thick. Depth to the buried solum ranges from 20 to 40 inches. Reaction is very strongly acid or strongly acid, except for the surface layer in areas that have been limed. Clay content ranges from 12 to 18 percent and sand content from 3 to 15 percent in the control section (10 to 40 inches).

The A horizon is dark grayish brown, grayish brown, dark brown, or brown.

The Bw horizon is dark brown, dark yellowish brown, brown, and yellowish brown.

The Eb horizon is pale brown or grayish brown or is mottled in shades of gray and brown.

The Bxb horizon is mottled in shades of brown or gray or has a brownish matrix with few to many grayish mottles. Texture is silt loam or loam.

Arkabutla Series

The Arkabutla series consists of somewhat poorly drained soils that formed in silty alluvium on flood plains. Slope ranges from 0 to 2 percent. Arkabutla soils are fine-silty, mixed, acid, thermic Aeric Fluvaquents.

Arkabutla soils are associated with Ariel, Chenneby, Rosebloom, and Urbo soils. Ariel soils are in higher positions on the flood plains than Arkabutla soils, have buried horizons, and are less than 18 percent clay in the control section. Chenneby soils do not have gray matrix colors above a depth of 20 inches. Rosebloom soils are in slightly lower positions on the flood plains and have gray matrix colors in the upper B horizon. Urbo soils have a fine control section.

Typical pedon of Arkabutla silt loam, occasionally flooded, approximately 4 miles east of Ackerman, Mississippi, 47 yards north of fence; SE1/4NW1/4 sec. 23, T. 17 N., R. 11 E.

Ap—0 to 7 inches; dark brown (10YR 4/3) silt loam; many medium distinct light brownish gray (10YR 6/2) mottles; weak fine granular structure; friable; many fine roots; common yellowish brown root stains; medium acid; abrupt smooth boundary.

Bw1—7 to 14 inches; dark brown (10YR 4/3) silt loam; common fine and medium distinct grayish brown (10YR 5/2) mottles; weak fine and medium subangular blocky structure; friable; few fine roots; strongly acid; clear smooth boundary.

Bw2—14 to 19 inches; mottled dark brown (10YR 4/3), grayish brown (10YR 5/2), and yellowish brown (10YR 5/4) silty clay loam; weak fine and medium subangular blocky structure; friable; few fine roots; very strongly acid; clear smooth boundary.

Bg1—19 to 31 inches; grayish brown (10YR 5/2) silty clay loam; many fine and medium distinct yellowish brown (10YR 5/4) mottles; weak medium subangular blocky structure; friable, slightly plastic; few fine roots; very strongly acid; gradual smooth boundary.

Bg2—31 to 54 inches; grayish brown (10YR 5/2) silty clay loam; common fine distinct yellowish brown mottles; weak medium subangular blocky structure; friable to firm, slightly sticky; common yellowish brown and reddish brown soft concretions; very strongly acid; gradual smooth boundary.

Bg3—54 to 66 inches; gray (10YR 5/1) silty clay loam; many medium distinct yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; friable to firm, slightly sticky; common yellowish brown and reddish brown soft concretions; very strongly acid.

The solum is 40 to 60 inches or more thick. Reaction is very strongly acid or strongly acid, except for the surface layer in areas that have been limed. Clay content

in the control section (10 to 40 inches) ranges from 20 to 35 percent, and the content of sand coarser than very fine sand is less than 15 percent. Brown and black concretions range from few to many in the B horizon.

The A horizon is dark brown, brown, or very dark grayish brown.

The Bw1 and Bw2 horizons are dark grayish brown or grayish brown; are mottled in shades of brown, yellow, and gray; or have a dark brown, brown, or yellowish brown matrix with few to many mottles having chroma of 2 or less. Texture is silt loam or silty clay loam.

The Bg horizon is dark grayish brown, grayish brown, or gray and is mottled in shades of brown. Texture is silt loam or silty clay loam.

Bude Series

The Bude series consists of somewhat poorly drained soils that have a fragipan. The soils formed in a silty mantle less than four feet thick and in the underlying loamy material. Bude soils are on uplands and stream terraces. Slope ranges from 0 to 2 percent. Bude soils are fine-silty, mixed, thermic Glossaquic Fragiudalfs.

Bude soils are associated with Guyton, Providence, and Tippah soils. Guyton soils are on low terraces and in lower positions on the flood plains than Bude soils. Guyton soils are poorly drained, are grayish in the upper part of the Bt horizon, and do not have a fragipan. Providence soils are on uplands, do not have gray mottles in the upper 16 inches, and are better drained. Tippah soils are on uplands and do not have a fragipan.

Typical pedon of Bude silt loam, approximately 2 miles northeast of French Camp, 138 yards south of gravel road, in soybean field; SW1/4SW1/4 sec. 28, T. 17 N., R. 9 E.

Ap1—0 to 4 inches; dark brown (10YR 4/3) silt loam; many medium faint brown (10YR 5/3) mottles; weak fine granular structure; very friable; few fine roots; few fine and medium black and brown concretions; medium acid; abrupt smooth boundary.

Ap2—4 to 7 inches; mottled dark brown (10YR 4/3), yellowish brown (10YR 5/4), and brown (10YR 5/3) silt loam; weak fine and medium granular structure; friable; few fine roots; few fine and medium black and brown concretions; strongly acid; clear smooth boundary.

Bw1—7 to 13 inches; yellowish brown (10YR 5/4) silt loam; common medium distinct dark yellowish brown (10YR 4/4) and few fine grayish brown mottles; weak fine and medium subangular blocky structure; friable, slightly plastic; few fine roots; few medium yellowish brown concretions; very strongly acid; clear smooth boundary.

Bw2—13 to 20 inches; mottled yellowish brown (10YR 5/6), pale brown (10YR 6/3), and light brownish gray (10YR 6/2) silt loam; weak fine and medium subangular blocky structure; friable, slightly plastic; common fine black and brown concretions; very strongly acid; clear smooth boundary.

Bx/E—20 to 30 inches; mottled light olive brown (2.5Y 5/4) (B), light yellowish brown (2.5Y 6/4), light brownish gray (2.5Y 6/2) (E), and yellowish brown (10YR 5/6) silt loam; weak fine and medium subangular blocky structure; friable; light olive brown portion is brittle and compact; many fine voids; common fine black and brown concretions; gray silt coatings around faces of peds; very strongly acid; clear irregular boundary.

2Btx1—30 to 47 inches; mottled gray (5Y 5/1), strong brown (7.5YR 5/6), and yellowish brown (10YR 5/4) silty clay loam containing noticeable sand; weak very coarse prismatic structure parting to moderate medium subangular blocky; firm, compact, brittle; many fine voids; patchy clay films on prisms; common gray silt tongues less than 1 inch wide; common medium black and brown concretions; very strongly acid; gradual wavy boundary.

2Btx2—47 to 60 inches; mottled gray (5Y 5/1) and strong brown (7.5YR 5/6) silt loam containing noticeable sand; weak very coarse prismatic structure parting to weak medium subangular blocky; firm, compact, brittle; many fine voids; patchy clay films on prisms; common grayish silt tongues less than 1 inch wide; common medium black and brown concretions; very strongly acid.

The solum is more than 60 inches thick. Depth to the fragipan ranges from 18 to 35 inches. Reaction ranges from very strongly acid to medium acid throughout, except for the surface layer in areas that have been limed. Content of brown and black concretions ranges from few to many in all horizons.

The A horizon is dark grayish brown, dark brown, dark yellowish brown, light yellowish brown, or yellowish brown or is mottled in shades of brown.

The Bw horizon is strong brown, yellowish brown, dark yellowish brown, or light yellowish brown and has few to many mottles with chroma of 2 or less or is mottled in shades of yellow, brown, and gray. It is silt loam or silty clay loam. Between a depth of 10 inches and the top of the fragipan, clay content ranges from 18 to 30 percent and sand content from 10 to 15 percent.

The Bx/E horizon is mottled in shades of brown and gray. Some pedons have a grayish E horizon or a mottled E/Bx horizon. Texture is silt loam, and clay content of horizons containing E material is less than that of the Bw and B'x horizons. Where present, the Bx horizon is gray or light brownish gray or is mottled in shades of yellow, brown, and gray. It is silt loam or silty clay loam.

The 2Btx horizon is silt loam, silty clay loam, or clay loam. Between the B horizon of the upper sequence and a depth of 48 inches, sand content is more than 15

percent. Some pedons have underlying horizons that are clay or sandy loam.

Cascilla Series

The Cascilla series consists of well drained soils that formed in silty alluvium on flood plains. Slope ranges from 0 to 2 percent. Cascilla soils are fine-silty, mixed, thermic Fluventic Dystrochrepts.

Cascilla soils are associated with Ariel, Kirkville, and Oaklimeter soils. Ariel soils have less than 18 percent clay in the control section (10 to 40 inches) and have buried A and B horizons. Kirkville soils are in slightly lower areas on the flood plains and have more than 15 percent sand coarser than very fine sand. Oaklimeter soils are in slightly lower areas on the flood plains and have mottles with chroma of 2 or less above a depth of 24 inches.

Typical pedon of Cascilla silt loam, occasionally flooded, approximately 11 miles northwest of Ackerman, Mississippi, 32 yards west of bridge on ditch, in cropland; SE1/4SW1/4 sec. 27, T. 11 N., R. 10 E.

Ap—0 to 8 inches; dark brown (10YR 4/3) silt loam; weak fine and medium granular structure; very friable; many fine roots; slightly acid; abrupt smooth boundary.

Bw1—8 to 19 inches; dark brown (7.5YR 4/4) silt loam; common medium distinct yellowish brown (10YR 5/4) mottles; friable; few fine roots; strongly acid; clear smooth boundary.

Bw2—19 to 26 inches; dark brown (7.5YR 4/4) silt loam; many coarse distinct yellowish brown (10YR 5/4) mottles; weak medium subangular blocky structure; friable; few fine black concretions; very strongly acid; clear smooth boundary.

Bw3—26 to 34 inches; mottled dark brown (10YR 4/3), pale brown (10YR 6/3), yellowish brown (10YR 5/4), and dark brown (7.5YR 4/4) silt loam; weak medium subangular blocky structure; friable; few fine black and yellowish brown concretions; very strongly acid; clear smooth boundary.

Bw4—34 to 52 inches; brown (10YR 5/3) silt loam; many medium yellowish brown (10YR 5/4) and common medium distinct light gray (10YR 7/1) mottles; weak medium subangular blocky structure; friable; few tongues of gray silt; common fine and medium black and yellowish brown concretions; very strongly acid; gradual smooth boundary.

BC—52 to 65 inches; yellowish brown (10YR 5/4) silt loam; many medium faint brown (10YR 5/3) and common medium distinct light gray (10YR 7/1) mottles; weak medium subangular blocky structure; friable; few tongues of gray silt; common fine and medium black and yellowish brown concretions; very strongly acid.

The solum is 45 to 80 inches thick. Reaction is very strongly acid or strongly acid, except for the surface layer in areas that have been limed.

The A horizon is dark brown, brown, yellowish brown, or dark yellowish brown.

The BA horizon, where present, and the Bw1 horizon are dark brown, brown, yellowish brown, or dark yellowish brown. The lower part of the B horizon is similar in color but may have few to common mottles in shades of gray below a depth of 24 inches. The B horizon is silt loam or silty clay loam that is 18 to 30 percent clay. The B horizon has few clay films or none in pores and few thin patchy clay films on peds. The increase in amount of clay from the A to the B horizon is too small to define an argillic horizon.

The 2C horizon, where present, is grayish brown, olive gray, brown, yellowish brown, or dark yellowish brown or is mottled in shades of brown and gray. Texture is fine sandy loam, loam, or silt loam.

Chenneby Series

The Chenneby series consists of somewhat poorly drained soils that formed in silty alluvium on flood plains. Slope ranges from 0 to 2 percent. Chenneby soils are fine-silty, mixed, thermic Fluvaquentic Dystrochrepts.

Chenneby soils are associated with Arkabutla, Kirkville, Oaklimeter, Rosebloom, and Urbo soils, all of which are on flood plains. Arkabutla and Urbo soils have gray matrix colors in the B horizon at a depth of less than 20 inches. Kirkville soils are in slightly higher areas on the flood plains and have more than 15 percent sand coarser than very fine sand in the control section. Oaklimeter soils are in higher positions on the flood plains, have buried horizons, and have less than 18 percent clay in the control section. Rosebloom soils are in lower areas on the flood plains and have gray matrix colors in the upper part of the B2 horizon.

Typical pedon of Chenneby silt loam, occasionally flooded, 3 miles northwest of Chester, Mississippi, 0.2 mile east of Natchez Trace Parkway, 400 feet north of gravel road; NE1/4NW1/4 sec. 29, T. 18 N., R. 10 E.

Ap1—0 to 4 inches; dark brown (10YR 4/3) silt loam; common medium distinct light brownish gray (10YR 6/2) mottles; weak fine granular structure; friable; many fine grass roots; strongly acid; abrupt smooth boundary.

Ap2—4 to 9 inches; dark brown (10YR 4/3) silt loam; common medium distinct light brownish gray (2.5Y 6/2) and yellowish brown (10YR 5/4) mottles; weak fine and medium granular structure; friable; few fine roots; few fine black and yellowish brown concretions; strongly acid; abrupt smooth boundary.

Bw1—9 to 17 inches; dark brown (10YR 4/3) silt loam; many medium distinct light brownish gray (10YR 6/2) mottles; weak medium subangular blocky

structure parting to weak medium granular; friable; few fine roots; few fine black and yellowish brown concretions; strongly acid; gradual smooth boundary.

Bw2—17 to 30 inches; dark brown (10YR 4/3) silty clay loam; many coarse distinct yellowish brown (10YR 5/4) and light brownish gray (10YR 6/2) mottles; weak medium subangular blocky structure; friable, slightly sticky, slightly plastic; common fine yellowish brown and black concretions; strongly acid; gradual smooth boundary.

Bg—30 to 40 inches; dark grayish brown (10YR 4/2) silty clay loam; many medium distinct yellowish brown (10YR 5/4) and light brownish gray (10YR 6/2) mottles; weak medium subangular blocky structure; slightly sticky, slightly plastic; common fine yellowish brown and black concretions; strongly acid; gradual smooth boundary.

Cg—40 to 60 inches; gray (5Y 5/1) silty clay loam; many medium distinct yellowish brown (10YR 5/4) and dark yellowish brown (10YR 4/4) mottles; massive; firm, slightly sticky, slightly plastic; many fine black concretions, few fine brown concretions; strongly acid.

Reaction ranges from very strongly acid to medium acid, except for the surface layer in areas that have been limed. The solum is 40 to more than 60 inches thick. The control section (10 to 40 inches) is 20 to 35 percent clay and less than 10 percent sand coarser than very fine sand.

The A horizon is dark brown, dark yellowish brown, or dark grayish brown. Some pedons have few to common mottles in shades of gray and brown.

The Bw1 horizon is brown or dark brown with common to many mottles in shades of gray and brown. Texture is silt loam or silty clay loam.

The Bw2 and Bg horizons are dark yellowish brown, dark brown, reddish brown, dark grayish brown, or grayish brown with common to many mottles in shades of gray and brown. In some pedons, the lower part of the B horizon is mottled in shades of gray and brown. It is silt loam or silty clay loam.

The C horizon is mottled in shades of gray and brown or has a gray matrix with few to many mottles in shades of gray and brown.

Guyton Series

The Guyton series consists of poorly drained soils that formed in silty material on flood plains and low terraces. Slope ranges from 0 to 1 percent. Guyton soils are fine-silty, siliceous, thermic Typic Glossaqualfs.

Guyton soils are associated with Bude, Ozan, and Rosebloom soils. Bude soils are on uplands and stream terraces, are browner and less gray in the upper part of the subsoil, and are better drained than the Guyton soils. Ozan soils are on stream terraces and flood plains and have more than 15 percent sand coarser than very fine sand in the control section. Rosebloom soils are in lower lying areas on the flood plains, do not have an argillic horizon, and do not have tonguing of E horizon material into the B horizon.

Typical pedon of Guyton silt loam, occasionally flooded, approximately 1/4 mile south of Fentress, Mississippi, 9 yards south of field road; SE1/4NW1/4 sec. 35, T. 17 N., R. 10 E.

Ap—0 to 6 inches; dark brown (10YR 4/3) silt loam; common medium distinct grayish brown (10YR 5/2) mottles; weak fine and medium granular structure; friable; many fine roots; medium acid; abrupt wavy boundary.

E—6 to 17 inches; gray (10YR 6/1) silt loam; common medium distinct yellowish brown (10YR 5/4) mottles; weak fine and medium subangular blocky structure; friable; many fine roots; few fine yellowish brown soft bodies; very strongly acid; clear irregular boundary.

B/E—17 to 30 inches; gray (10YR 5/1) silty clay loam; common medium distinct strong brown (7.5YR 5/6) and yellowish brown (10YR 5/4) mottles; weak medium subangular blocky structure; friable; the strong brown areas are slightly brittle; patchy clay films on peds and in cracks; tongues of light brownish gray (10YR 6/2) silt loam make up about 15 to 20 percent of this horizon; very strongly acid; clear wavy boundary.

Btg1—30 to 47 inches; grayish brown (10YR 5/2) silty clay loam; many medium distinct strong brown (7.5YR 5/6) and light brownish gray (2.5Y 6/2) mottles; weak coarse and medium subangular blocky structure; slightly compact, friable; clay films on peds and in cracks; few fine yellowish brown concretions; very strongly acid; gradual wavy boundary.

Btg2—47 to 58 inches; grayish brown (10YR 5/2) silty clay loam; few medium distinct yellowish brown (10YR 5/6) mottles; weak coarse and medium subangular blocky structure; friable to firm; few fine yellowish brown concretions; very strongly acid; gradual wavy boundary.

Btg3—58 to 77 inches; grayish brown (10YR 5/2) silty clay loam; many medium strong brown (7.5YR 5/6) and yellowish brown (10YR 5/6) mottles; weak coarse and medium subangular blocky structure; friable to firm; patchy clay films on vertical faces of peds and in cracks; few fine yellowish brown concretions; very strongly acid.

The soil ranges from very strongly acid to medium acid, except for the surface layer in areas that have been limed. The solum is 50 to 80 inches thick.

The A or Ap horizon is brown, dark brown, grayish brown, dark grayish brown, or light brownish gray.

The Eg horizon is light gray, gray, grayish brown, or light brownish gray with few to many mottles in shades of brown. The lower boundary is clear irregular to abrupt irregular; tongues of the Eg horizon extend into the Btg horizon.

The Btg horizon is gray, grayish brown, or light grayish brown with few to many mottles in shades of brown and gray. Texture is silt loam, silty clay loam, or clay loam.

Some pedons have a BC horizon. The BC horizon has the same color as the Btg horizon. Texture is silt loam, silty clay loam, clay loam, or sandy clay loam.

Kirkville Series

The Kirkville series consists of moderately well drained soils that formed in loamy alluvium on flood plains. Slope ranges from 0 to 2 percent. Kirkville soils are coarse-loamy, siliceous, thermic Fluvaquentic Dystrochrepts.

Kirkville soils are associated with Ariel, Cascilla, Chenneby, and Mantachie soils, all of which are on flood plains. Ariel and Cascilla soils are in slightly higher areas on the flood plains, and Chenneby soils are in slightly lower areas; these soils have more silt and less sand in the upper part of the B horizon. Mantachie soils are in slightly lower positions on the flood plains, have more clay in the B horizon, and are dominantly gray within 20 inches of the surface.

Typical pedon of Kirkville fine sandy loam, occasionally flooded, approximately 3 miles northeast of Ackerman, Mississippi, 30 yards east of creek near fork; SW1/4NE1/4 sec. 15, T. 17 N., R. 11 E.

Ap—0 to 7 inches; dark brown (10YR 4/3) fine sandy loam; weak fine granular structure; very friable; many fine roots; neutral; abrupt smooth boundary.

A—7 to 13 inches; dark brown (10YR 4/3) fine sandy loam; few fine faint pale brown mottles; weak fine and medium granular structure; friable; many fine roots; slightly acid; clear smooth boundary.

Bw1—13 to 24 inches; dark brown (10YR 4/3) loam; common medium distinct light brownish gray (10YR 6/2) and few fine faint yellowish brown mottles; weak medium subangular blocky structure; friable; many fine roots; very strongly acid; gradual smooth boundary.

Bw2—24 to 43 inches; mottled yellowish brown (10YR 5/4), light grayish brown (10YR 6/2), and strong brown (7.5YR 5/6) sandy loam; weak medium subangular blocky structure; friable; few fine roots; strongly acid; gradual smooth boundary.

Bg—43 to 54 inches; grayish brown (2.5Y 5/2) sandy loam; many coarse distinct yellowish brown (10YR 5/6) and strong brown (7.5YR 5/6) mottles; weak medium subangular blocky structure; friable; few soft brownish accretions; very strongly acid; gradual smooth boundary.

Cg—54 to 65 inches; gray (10YR 6/1) sandy loam; many medium distinct yellowish brown (10YR 5/6) and strong brown (7.5YR 5/6) mottles; structureless; very friable; very strongly acid.

The soil is very strongly acid or strongly acid throughout, except for the surface horizon in areas that have been limed.

The A horizon is dark grayish brown, dark brown, dark yellowish brown, or brown.

The Bw1 horizon is dark brown, dark yellowish brown, light olive brown, or yellowish brown with grayish mottles; or the horizon is mottled in shades of gray and brown. Texture is loam, fine sandy loam, or sandy loam.

The Bw2 horizon is similar in color to the Bw1 horizon but has few to many grayish mottles, or the horizon is mottled in shades of brown and gray. Texture is loam, fine sandy loam, or sandy loam.

The Bg and Cg horizons are grayish brown, light brownish gray, or gray with mottles in shades of brown, or it is mottled in shades of brown and gray. Texture is loam, fine sandy loam, or sandy loam.

Maben Series

The Maben series consists of well drained soils that formed in deposits of stratified loamy material and shaly clay. These soils are on upland ridgetops and hillsides. Slope ranges from 2 to 35 percent. Maben soils are fine, mixed, thermic Ultic Hapludalfs.

Maben soils are associated with Providence, Ruston, Smithdale, and Tippah soils. Providence and Tippah soils are on upland ridges and hillsides and have a fine-silty Bt horizon. Ruston and Smithdale soils are also on upland ridges and hillsides but have a fine-loamy Bt horizon.

Typical pedon of Maben silt loam, 2 to 5 percent slopes, approximately 2 miles northeast of Reform, Mississippi, 200 yards north of gravel road; NW1/4SE1/4 sec. 3, T. 18 N., R. 11 E.

Ap—0 to 5 inches; dark brown (10YR 4/3) silt loam; many medium distinct strong brown (7.5YR 5/6) mottles; weak fine and medium granular structure; friable; many fine and medium roots; slightly acid; abrupt smooth boundary.

Bt1—5 to 15 inches; reddish brown (2.5YR 4/4) silty clay; strong fine and medium subangular and angular blocky structure; firm, plastic, sticky; common fine roots; thin continuous clay films on peds; slightly acid; clear smooth boundary.

Bt2—15 to 22 inches; reddish brown (2.5YR 4/4) silty clay; many medium distinct strong brown (7.5YR 5/6) mottles; strong fine and medium subangular and angular blocky structure; firm, plastic, sticky; common fine roots; thin continuous clay films on peds; slightly acid; clear smooth boundary.

Bt3—22 to 35 inches; yellowish red (5YR 5/6) silty clay; many medium distinct strong brown (7.5YR 5/6)

mottles; strong fine and medium subangular and angular blocky structure; firm, plastic, sticky; thin patchy clay films on peds; common fine gray fragments of shale; few fine flakes of mica; very strongly acid; clear smooth boundary.

C—35 to 67 inches; stratified layers of yellowish brown (10YR 5/6) and brownish yellow (10YR 6/6) fine sandy loam and gray (5Y 6/1) partially weathered shale; massive; shale has rock structure; friable; few fine mica flakes; very strongly acid.

The soil ranges from very strongly acid to slightly acid, except for the surface layer in areas that have been limed.

The A horizon is brown, dark brown, yellowish brown, or dark yellowish brown. Texture is silt loam or fine sandy loam.

An E horizon is in some pedons.

The Bt horizon is yellowish red, dark reddish brown, or reddish brown. Mottles in shades of brown and yellow range from none to common. Texture is clay, silty clay, clay loam, or silty clay loam. Clay content ranges from 35 to 55 percent in the upper 20 inches.

The BC horizon has colors similar to those of the Bt horizon, or it is mottled in shades of red, gray, brown, or yellow. It is clay, silty clay, clay loam, silty clay loam, or loam. In some pedons, as much as 50 percent of the volume is platelike soft weathered shale.

The C horizon is various shades of red, gray, brown, or yellow. It is stratified fine sandy loam and weathered shale that has platelike rock structure.

Mantachie Series

The Mantachie series consists of somewhat poorly drained soils that formed in loamy alluvium on flood plains. Slope ranges from 0 to 2 percent. Mantachie soils are fine-loamy, siliceous, acid, thermic Aeric Fluvaquents.

Mantachie soils are associated with Kirkville, Oaklimeter, and Ozan soils. Kirkville soils are in slightly higher areas on the flood plains than the Mantachie soils, are better drained, and do not have gray matrix colors in the B horizon above a depth of 20 inches. Oaklimeter soils are in slightly higher areas on the flood plains, have buried horizons, and are less than 18 percent clay in the control section. Ozan soils are on poorly drained stream terraces and flood plains and have dominantly gray matrix colors in the B horizon.

Typical pedon of Mantachie loam, occasionally flooded, northeast of Reform, Mississippi, 2 miles east on paved road, 3/4 mile north on gravel road, 150 yards west on field road, 2 yards south, in soybeans; SE1/4NE1/4 sec. 10, T. 18 N., R. 11 E.

Ap—0 to 7 inches; dark brown (10YR 4/3) loam; many fine distinct grayish brown mottles; weak fine granular structure; friable; few fine roots; common fine brownish concretions; slightly acid; abrupt smooth boundary.

BA—7 to 11 inches; mottled dark brown (10YR 4/3), grayish brown (10YR 5/2), and light olive brown (2.5Y 5/6) loam; weak fine granular and subangular blocky structure; friable; few fine roots; common medium yellowish brown concretions; few fine black concretions; strongly acid; clear smooth boundary.

Bw—11 to 18 inches; mottled grayish brown (10YR 5/2), dark yellowish brown (10YR 4/4), and yellowish brown (10YR 5/6) loam; weak medium subangular blocky structure; friable; few fine roots; common medium brownish concretions; few fine black concretions; strongly acid; clear smooth boundary.

Bg1—18 to 35 inches; grayish brown (2.5Y 5/2) loam; many coarse distinct dark yellowish brown (10YR 4/4) and yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; friable; few fine roots; common medium brownish concretions; few fine black concretions; very strongly acid; gradual smooth boundary.

Bg2—35 to 45 inches; gray (10YR 5/1) loam; many coarse distinct dark yellowish brown (10YR 4/4) and yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; friable; common medium black and brownish concretions; very strongly acid; gradual smooth boundary.

Bg3—45 to 60 inches; mottled gray (10YR 5/1), dark yellowish brown (10YR 4/4), yellowish brown (10YR 5/6), and dark brown (7.5YR 4/4) sandy loam; weak fine and medium subangular blocky structure; friable; common medium black and brownish concretions; very strongly acid.

The solum is 30 inches to more than 60 inches thick. Reaction is very strongly acid to strongly acid except for the surface layer in areas that have been limed. Black and brownish concretions range from none to common throughout. The average clay content of the control section (10 to 40 inches) ranges from 18 to 34 percent.

The Ap horizon is dark brown, dark grayish brown, brown, dark yellowish brown, or yellowish brown or is mottled in shades of gray and brown.

The upper part of the B horizon is mottled in shades of brown, gray, and yellow, or it has a dark grayish brown, grayish brown, brown, or yellowish brown matrix with few to many grayish mottles. The lower part of the B horizon is dark grayish brown, grayish brown, gray, light gray, or light brownish gray with few to many mottles in shades of brown and red. The B horizon is clay loam, loam, sandy loam, sandy clay loam, or silt loam.

Oaklimeter Series

The Oaklimeter series consists of moderately well drained soils that formed in silty alluvium on flood plains.

Slope ranges from 0 to 2 percent. Oaklimeter soils are coarse-silty, mixed, thermic Fluvaquentic Dystrochrepts.

Oaklimeter soils are associated with Ariel, Cascilla, Chenneby, and Mantachie soils. Ariel and Cascilla soils are in slightly higher positions on the flood plains, are well drained, and do not have mottles with chroma of 2 or less within 24 inches of the surface. Chenneby soils are in slightly lower areas on the flood plains and have more clay in the upper part of the subsoil than the Oaklimeter soils. Mantachie soils are in slightly lower areas on the flood plains, have more clay and sand in the upper part of the subsoil, and are dominantly gray at a depth of less than 20 inches.

Typical pedon of Oaklimeter silt loam, occasionally flooded, approximately 7 miles northwest of French Camp, Mississippi, 40 yards south of main ditch at cattle crossing; SW1/4NE1/4 sec. 35, T. 18 N., R. 8 E.

Ap—0 to 7 inches; dark brown (10YR 4/3) silt loam; common medium faint dark yellowish brown and distinct light brownish gray (10YR 6/2) mottles; weak fine granular structure; very friable; many fine roots; common brown and black stains; very strongly acid; abrupt smooth boundary.

Bw1—7 to 16 inches; dark brown (10YR 4/3) silt loam; few fine distinct pale brown mottles; weak medium subangular blocky structure; friable; common fine roots; very strongly acid; gradual wavy boundary.

Bw2—16 to 23 inches; dark brown (10YR 4/3) silt loam; common medium distinct light brownish gray (10YR 6/2) mottles; weak medium subangular blocky structure; friable; common fine roots; very strongly acid; gradual wavy boundary.

BEb—23 to 29 inches; mottled dark brown (10YR 4/3), light brownish gray (10YR 6/2), yellowish brown (10YR 5/4), and pale brown (10YR 6/3) silt loam; weak coarse prismatic structure parting to weak medium subangular blocky; friable; few fine roots; few fine pores and voids; common fine black and brown stains; very strongly acid; gradual wavy boundary.

Btb1—29 to 44 inches; mottled dark yellowish brown (10YR 4/4), gray (10YR 6/1), and yellowish brown (10YR 5/4) silt loam; weak coarse prismatic structure parting to weak medium subangular blocky; friable; common fine black and brown stains; few fine pores and voids; few thin clay films in pores and voids and on some peds; very strongly acid; gradual wavy boundary.

Btb2—44 to 60 inches; mottled dark yellowish brown (10YR 4/4), pale brown (10YR 6/3), and light brownish gray (10YR 6/2) silt loam; weak coarse prismatic structure parting to weak medium subangular blocky; friable; common fine black and brown stains; few fine pores and voids; few thin clay films in pores and voids and on some peds; few pockets of gray silt loam between prisms; very strongly acid.

The soil is very strongly acid or strongly acid throughout, except for the surface horizon in areas that have been limed. The control section (10 to 40 inches) is 7 to 18 percent clay and less than 15 percent sand coarser than very fine sand.

The Ap horizon is dark grayish brown, brown, dark brown, and dark yellowish brown.

The Bw1 horizon is brown, dark brown, dark yellowish brown, and yellowish brown. Grayish mottles range from none to common in this horizon.

The Bw2 horizon has similar matrix color to the Bw1 horizon and few to many grayish mottles, or the horizon is mottled in shades of brown and gray.

The BEb, Bt1b, and Bt2b horizons are mottled in shades of brown and gray or have a gray matrix.

The buried horizons are silt loam or silty clay loam. Depth to the buried horizons ranges from 20 to 40 inches. Brown and black concretions range from few to many.

Ora Series

The Ora series consists of moderately well drained soils that have a fragipan. These soils formed in loamy material on upland ridges and hillsides. Slope ranges from 2 to 12 percent. Ora soils are fine-loamy, siliceous, thermic Typic Fragiudults.

Ora soils are associated with Providence, Savannah, Stough, and Tippah soils. Providence and Tippah soils are on upland ridges and hillsides and have a fine-silty control section. Savannah soils are on upland ridges, and their Bt horizon has hue of 7.5YR or yellower. Stough soils are on upland flats and stream terraces, have a coarse-loamy control section, and are somewhat poorly drained.

Typical pedon of Ora loam, 5 to 8 percent slopes, eroded, approximately 0.75 mile southeast of Mathiston, Mississippi; NE1/4NE1/4 sec. 11, T. 19 N., R. 11 E.

Ap—0 to 5 inches; dark brown (10YR 4/3) loam; weak fine granular structure; very friable; common fine roots; slightly acid; clear smooth boundary.

BE—5 to 9 inches; strong brown (7.5YR 5/6) loam; weak fine and medium subangular blocky structure; friable; few fine roots; medium acid; clear smooth boundary.

Bt1—9 to 18 inches; yellowish red (5YR 5/6) sandy clay loam; moderate fine and medium subangular blocky structure; friable; patchy clay films on peds; strongly acid; clear smooth boundary.

Bt2—18 to 22 inches; yellowish red (5YR 5/6) sandy clay loam; common medium distinct strong brown (7.5YR 5/6) mottles; moderate fine and medium subangular blocky structure; friable; patchy clay films

on peds; very strongly acid; gradual smooth boundary.

Btx1—22 to 38 inches; mottled strong brown (7.5YR 5/6), yellowish red (5YR 5/6), and light brownish gray (10YR 6/2) sandy clay loam; weak very coarse prismatic structure parting to moderate medium subangular blocky; firm, hard, brittle and compact in about 65 percent of the volume; light brownish gray sandy loam between prisms; clay films on peds; very strongly acid; gradual smooth boundary.

Btx2—38 to 50 inches; mottled red (2.5YR 4/8), yellowish red (5YR 5/8), strong brown (7.5YR 5/6), and pale brown (10YR 6/3) loam; weak very coarse prismatic structure parting to moderate medium subangular blocky; firm, compact and brittle in about 65 percent of the volume; light brownish gray sandy loam between prisms; clay films on peds; very strongly acid; gradual smooth boundary.

C—50 to 60 inches; strong brown (7.5YR 5/6) sandy loam; many coarse distinct light yellowish brown (10YR 6/4) mottles; structureless; friable; very strongly acid.

The soil is very strongly acid or strongly acid except for the surface layer in areas that have been limed. Depth to the fragipan ranges from 18 to 30 inches.

The Ap horizon is dark brown, dark grayish brown, brown, or yellowish brown. Where present, the thin A horizon is dark gray, very dark grayish brown, or very dark gray.

The BE horizon, where present, is yellowish red or strong brown.

The Bt horizon is yellowish red or red. Texture is clay loam, sandy clay loam, or loam.

The Bx horizon, and the C horizon where present, is mottled in shades of yellow, brown, gray, and red or has a red, yellowish red, or strong brown matrix with mottles in shades of gray and brown. The Bx and C horizons are sandy clay loam, loam, or sandy loam.

Ozan Series

The Ozan series consists of poorly drained soils that formed in loamy material on stream terraces and flood plains. Slope ranges from 0 to 1 percent. Ozan soils are coarse-loamy, siliceous, thermic Typic Glossaqualfs.

Ozan soils are associated with Guyton, Mantachie, and Stough soils. Guyton soils are on low terraces and flood plains but contain less than 15 percent sand larger than very fine sand in the control section. Mantachie soils are on flood plains, and Stough soils are on upland flats and stream terraces; these soils are better drained and are browner in the upper part of the subsoil than the Ozan soils.

Typical pedon of Ozan loam, occasionally flooded, approximately 2 miles southwest of Tomnolen, Mississippi, 50 yards northwest of pine tree near gravel road; SW1/4NW1/4 sec. 33, T. 19 N., R. 9 E.

Ap—0 to 5 inches; grayish brown (10YR 5/2) loam; few fine faint light brownish gray mottles; weak fine and medium granular structure; very friable; many fine roots; few yellowish brown root stains; slightly acid; clear smooth boundary.

E—5 to 16 inches; light gray (10YR 6/1) fine sandy loam; few medium distinct yellowish brown mottles; weak medium subangular blocky structure; friable; common fine roots in upper part; strongly acid; clear smooth boundary.

Btg1—16 to 33 inches; light gray (10YR 6/1) loam; common medium and coarse distinct yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; friable; common tongues of sandy loam extending through horizon; sand grains coated and bridged with clay; few fine black and brown concretions; very strongly acid; gradual smooth boundary.

Btg2—33 to 51 inches; light gray (10YR 6/1) loam; many coarse distinct yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; firm; few patchy clay films on peds; sand grains coated and bridged with clay; few medium black and strong brown concretions; few quartz pebbles; very strongly acid; gradual smooth boundary.

Btg3—51 to 70 inches; light gray (10YR 6/1) sandy loam; common medium distinct yellowish brown (10YR 5/6) mottles; weak to moderate medium subangular blocky structure; friable; sand grains coated and bridged with clay; common medium dark brown concretions; very strongly acid.

The soil ranges from very strongly acid to medium acid in all horizons. The solum is 60 to 80 inches or more thick.

The Ap horizon is grayish brown, light brownish gray, or dark grayish brown or is mottled in shades of gray and brown.

The Eg horizon is light gray or light brownish gray with many mottles to none in shades of brown or gray.

Tongues of gray sandy loam extend as vertical tubes through the upper part of the Btg horizon. These tongues are 1 to 2 inches in diameter at the top of the horizon and taper to about 1/2 inch. The Btg horizon is light gray, gray, or light brownish gray and is distinctly mottled in shades of brown. Texture is sandy loam or loam, but in some pedons the lower part of the Btg horizon is sandy clay loam or clay loam. The upper 20 inches of the Btg horizon is 10 to 18 percent clay, more than 20 percent silt, and more than 20 percent sand coarser than very fine sand.

Providence Series

The Providence series consists of moderately well drained soils that have a fragipan. These soils formed in a thin mantle of silty material and the underlying loamy

material. Providence soils are on upland ridges and hillsides. Slope ranges from 2 to 15 percent. Providence soils are fine-silty, mixed, thermic Typic Fragiudalfs.

Providence soils are associated with Bude, Maben, Ora, Smithdale, and Sweatman soils. Bude soils are on uplands and stream terraces in slightly lower positions than the Providence soils. Bude soils are somewhat poorly drained, and they have mottles with chroma of 2 or less in the upper part of the B horizon. Maben soils are on upland ridges and hillsides. They have a fine control section. Ora and Smithdale soils also are on upland ridges and hillsides. They have a fine-loamy control section. Sweatman soils have a base saturation of less than 35 percent 50 inches below the top of the argillic horizon. Maben, Smithdale, and Sweatman soils do not have a fragipan.

Typical pedon of Providence silt loam, 2 to 5 percent slopes, eroded, approximately 3.5 miles northeast of Reform, Mississippi, 12 yards north of gravel road; SW1/4NE1/4 sec. 26, T. 17 N., R. 9 E.

Ap—0 to 5 inches; dark brown (10YR 4/3) silt loam; few medium distinct strong brown (7.5YR 5/6) mottles; weak fine granular structure; friable; few fine roots; slightly acid; abrupt smooth boundary.

Bt1—5 to 13 inches; strong brown (7.5YR 5/6) silt loam; moderate medium subangular blocky structure; friable; few fine and medium roots; patchy clay films on peds; some material from horizon above in root channels; strongly acid; clear smooth boundary.

Bt2—13 to 19 inches; strong brown (7.5YR 5/6) silt loam; moderate fine and medium subangular blocky structure; few fine roots; patchy clay films on peds; few brown coatings on peds in lower part; very strongly acid; clear irregular boundary.

Btx—19 to 30 inches; strong brown (7.5YR 5/6) silt loam; many medium distinct light yellowish brown (10YR 6/4) and light brownish gray (10YR 6/2) mottles; moderate very coarse prismatic structure parting to moderate medium subangular blocky; firm, compact, brittle; few clay films on peds; few black and yellowish brown concretions; very strongly acid; gradual smooth boundary.

2Btx—30 to 60 inches; mottled strong brown (7.5YR 5/6), gray (10YR 6/1), and yellowish brown (10YR 5/6) clay loam; moderate very coarse prismatic structure parting to moderate medium subangular and angular blocky; firm, compact, brittle; few fine pores; light gray silt coatings on a few peds and in cracks; patchy clay films on peds; common medium black and yellowish brown concretions; very strongly acid.

The soil ranges from very strongly acid to medium acid throughout, except for the surface layer in areas that have been limed. Depth to the fragipan ranges from 18 to 30 inches. The solum is more than 60 inches thick.

The A horizon is dark grayish brown, grayish brown, dark brown, and yellowish brown.

The Bt horizon is strong brown, yellowish brown, or yellowish red. Texture is silt loam or silty clay loam. Clay content ranges from 18 to 30 percent in the Bt horizon.

The Bx and 2Bx horizons have a yellowish red, yellowish brown, or strong brown matrix and mottles in shades of gray, brown, and red; or they are mottled yellow, brown, gray, and red. The upper part of the fragipan, the Bx horizon, is silty clay loam or silt loam. The lower part of the fragipan, the 2Bx horizon, is clay loam, sandy clay loam, loam, or sandy loam.

Rosebloom Series

The Rosebloom series consists of poorly drained soils that formed in silty alluvium on flood plains. Slope ranges from 0 to 2 percent. Rosebloom soils are fine-silty, mixed, acid, thermic Typic Fluvaquents.

Rosebloom soils are associated with Arkabutla, Chenneby, Guyton, and Urbo soils. Arkabutla, Chenneby, and Urbo soils are in slightly higher positions on flood plains, are browner in the upper part of the subsoil, and are better drained than the Rosebloom soils. Guyton soils are on low terraces and in positions similar to those of the Rosebloom soils on flood plains and have a Bt horizon with clay films and tonguing of the E horizon into the Bt horizon.

Typical pedon of Rosebloom silt loam, occasionally flooded, approximately 4 1/2 miles southeast of Weir, Mississippi, 130 yards east of paved road, 20 yards north of ditch; SW1/4NE1/4 sec. 34, T. 16 N., R. 10 E.

Ap—0 to 9 inches; grayish brown (10YR 5/2) silt loam; many dark brown (10YR 4/3) mottles; weak fine and medium granular structure; friable; common fine roots; common medium yellowish brown (10YR 5/6) stains; few fine black and brown concretions; strongly acid; abrupt smooth boundary.

Bg1—9 to 33 inches; gray (10YR 5/1) silty clay loam; common fine and medium distinct yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; friable, plastic; few fine roots; few fine black and brown concretions; very strongly acid; clear smooth boundary.

Bg2—33 to 60 inches; gray (10YR 5/1) silty clay loam; common medium distinct light olive brown (2.5Y 5/6) mottles; weak medium subangular blocky structure; firm, plastic; few fine black and brown concretions; very strongly acid.

The soil is very strongly acid or strongly acid throughout, except for the surface horizon in areas that have been limed. Combined thickness of the A and B horizons ranges from 40 inches to more than 60 inches. Black and brown concretions range from few to many in all horizons.

The Ap horizon is grayish brown, dark brown, dark grayish brown, pale brown, or brown or is mottled with these colors.

The Bg horizon is dark gray, light gray, gray, and light brownish gray. Most pedons have few to common mottles in shades of brown. Texture is silt loam or silty clay loam. Brown and red stains or coatings range from none to many.

Ruston Series

The Ruston series consists of well drained soils that formed in loamy material on upland ridges and hillsides. Slope ranges from 2 to 8 percent. Ruston soils are fine-loamy, siliceous, thermic Typic Paleudults.

Ruston soils are associated with Maben, Savannah, Smithdale, and Sweatman soils. Maben and Sweatman soils are on upland ridgetops and hillsides and have a fine Bt horizon overlying stratified loamy and shaly clay. Savannah soils are on upland ridges, are moderately well drained, and have a fragipan. Smithdale soils are on upland ridges and hillsides, have a significant decrease in clay content within a depth of 60 inches, and do not have a bisequal profile.

Typical pedon of Ruston fine sandy loam, 5 to 8 percent slopes, approximately 3 miles south of Ackerman, Mississippi, 100 yards east of east side of old sand pit, in wooded area; SE1/4SE1/4 sec. 8, T. 16 N., R. 11 E.

Ap—0 to 6 inches; yellowish brown (10YR 5/4) fine sandy loam; weak medium granular structure; very friable; many fine roots; medium acid; clear smooth boundary.

Bt1—6 to 18 inches; yellowish red (5YR 5/6) clay loam; moderate fine and medium subangular blocky structure; friable; clay films on peds; many fine roots; very strongly acid; gradual wavy boundary.

Bt2—18 to 28 inches; red (2.5YR 4/6) sandy clay loam; moderate fine and medium subangular blocky structure; friable; clay films on peds; few fine roots; very strongly acid; gradual wavy boundary.

B/Ex—28 to 37 inches; yellowish red (5YR 5/6) sandy loam; weak medium subangular blocky structure; firm; common fine pores; pockets, 1/2 to 2 inches in diameter, of somewhat brittle light yellowish brown (10YR 6/4) fine sandy loam E material makes up almost half of the horizon; few thin patchy clay films on peds; very strongly acid; clear wavy boundary.

B't1—37 to 52 inches; red (2.5YR 4/6) sandy clay loam; common medium distinct yellowish brown (10YR 5/6) and light yellowish brown (10YR 6/4) mottles; moderate medium subangular blocky structure; firm, somewhat brittle; thin patchy clay films on peds; very strongly acid; gradual wavy boundary.

B't2—52 to 80 inches; mottled red (2.5YR 4/6), yellowish brown (10YR 5/6), and pale brown (10YR 6/3) sandy clay loam; moderate medium subangular blocky structure; firm, somewhat brittle; thin patchy clay films on peds; very strongly acid.

The soil is very strongly acid or strongly acid, except for the surface layer in areas that have been limed. The solum is more than 60 inches thick.

The A horizon is light brownish gray, grayish brown, dark grayish brown, pale brown, light yellowish brown, yellowish brown, brown, or dark brown.

The Bt horizon is reddish brown, reddish yellow, yellowish red, or red sandy clay loam, fine sandy loam, loam, or clay loam. The B/Ex horizon is definitive for the series. The B't horizon in most pedons is mottled in shades of red, brown, or gray. The upper 20 inches of the B2t horizon is 18 to 30 percent clay and 20 to 50 percent silt. The clay content decreases from the Bt horizons to the B/Ex horizon but increases in the B't horizon. The Ex part is light yellowish brown, brown, or pale brown fine sandy loam or sandy loam in streaks and pockets that make up as much as 50 percent of the horizon.

Savannah Series

The Savannah series consists of moderately well drained soils that have a fragipan. These soils formed in loamy material on upland ridges and hillsides. Slope ranges from 2 to 8 percent. Savannah soils are fine-loamy, siliceous, thermic Typic Fragiudults.

Savannah soils are associated with Ora, Ruston, and Stough soils. Ora and Ruston soils are on upland ridges and hillsides and have a Bt horizon with hue of 7.5YR or redder. Ruston soils are well drained and do not have a fragipan. Stough soils are on upland flats and stream terraces, have a coarse-loamy control section, and are somewhat poorly drained.

Typical pedon of Savannah fine sandy loam, 5 to 8 percent slopes, eroded, approximately 5 miles east of Ackerman on Mississippi Highway 12 to Oktibbeha County line, approximately 0.3 mile south, 2 yards south of fence near railroad, in timber; NE1/4SE1/4 sec. 13, T. 17 N., R. 11 E.

Ap—0 to 6 inches; dark grayish brown (10YR 4/2) fine sandy loam; weak fine and medium granular structure; very friable; few fine roots; few fine black concretions; very strongly acid; clear smooth boundary.

E/B—6 to 10 inches; mixed brown (10YR 5/3) (E) and yellowish brown (10YR 5/6) (B) loam; weak medium granular and weak medium subangular blocky structure; friable; few fine roots; few fine black and brown concretions; very strongly acid; clear smooth boundary.

Bt1—10 to 17 inches; strong brown (7.5YR 5/6) sandy clay loam; moderate medium subangular blocky structure; friable; some material from A horizon in

root channels and worm holes in upper part; sand grains coated and bridged with clay; few brown and black concretions; very strongly acid; clear smooth boundary.

Bt2—17 to 22 inches; strong brown (7.5YR 5/6) sandy clay loam; common fine distinct pale brown (10YR 6/3) mottles; moderate medium subangular blocky structure; friable; sand grains coated and bridged with clay; few brown and black concretions; very strongly acid; gradual boundary.

Btx1—22 to 43 inches; mottled strong brown (7.5YR 5/6), light brownish gray (10YR 6/2), and yellowish red (5YR 4/6) sandy clay loam; weak very coarse prismatic structure parting to moderate medium subangular and angular blocky; hard, compact, and brittle in 70 to 75 percent of the mass; patchy clay films on peds and in cracks; few fine black and reddish brown concretions; very strongly acid; gradual smooth boundary.

Btx2—43 to 60 inches; mottled yellowish brown (10YR 5/6), gray (10YR 5/1), and yellowish red (5YR 4/6) sandy loam; weak very coarse prismatic structure parting to moderate medium subangular and angular blocky; hard, compact, and brittle in 70 to 75 percent of the mass; patchy clay films on peds and in cracks; few fine black and reddish brown concretions; very strongly acid.

The soil ranges from extremely acid to strongly acid, except for the surface horizon in areas that have been limed. Depth to the fragipan ranges from 16 to 32 inches. The solum is 60 inches to more than 80 inches thick.

The Ap and E horizons, where present, are dark grayish brown, brown, pale brown, yellowish brown, and light olive brown. Some pedons have a thin E/B horizon.

The Bt horizon is strong brown, yellowish brown, or light olive brown. The Bt and Bx horizons are sandy clay loam, sandy loam, clay loam, or loam. The Bt horizon is 18 to 32 percent clay and 20 to 50 percent silt. The Btx horizon is mottled in shades of yellow, brown, red, and gray or is yellowish brown mottled with shades of gray. Few to common brown and black concretions are throughout.

Smithdale Series

The Smithdale series consists of well drained soils that formed in loamy materials on uplands. Slope ranges from 5 to 35 percent. Smithdale soils are fine-loamy, siliceous, thermic, Typic Paleudults.

Smithdale soils are associated with Maben, Providence, Ruston, and Sweatman soils, all of which are on upland ridges and hillsides. Maben and Sweatman soils have a Bt horizon that is more than 35 percent clay. Providence soils have a fragipan. Ruston soils are fine-loamy in the lower part of the subsoil and are bisequal.

Typical pedon of Smithdale fine sandy loam, 8 to 15 percent slopes, approximately 1.8 miles west of Ackerman, Mississippi, in pasture; NE1/4NW1/4 sec. 25, T. 17 N., R. 10 E.

Ap—0 to 7 inches; brown (10YR 5/3) fine sandy loam; weak fine and medium granular structure; very friable; common fine roots; strongly acid; clear smooth boundary.

Bt1—7 to 28 inches; red (2.5YR 4/6) sandy clay loam; moderate fine and medium subangular blocky structure; friable; thin clay films on peds; common fine roots; very strongly acid; clear smooth boundary.

Bt2—28 to 47 inches; yellowish red (5YR 4/6) sandy clay loam; weak medium subangular blocky structure; sand grains coated and bridged with clay and oxides; very strongly acid; gradual smooth boundary.

Bt3—47 to 80 inches; red (2.5YR 4/6) sandy loam; weak medium subangular blocky structure; very friable; sand grains bridged and coated with clay and oxides; few pockets of uncoated sand grains; many fine mica flakes; very strongly acid.

The soil is very strongly acid or strongly acid throughout, except for the surface horizon in areas that have been limed. The solum is 60 to more than 100 inches thick.

The A horizon, where present, is dark grayish brown, very dark grayish brown, or dark brown. The Ap and E horizons are brown, pale brown, dark brown, grayish brown, and yellowish brown.

Some pedons have a dark brown, strong brown, or yellowish red BE horizon. The upper part of the Bt horizon is yellowish red or red sandy clay loam or clay loam. The lower part of the Bt horizon is similar to the upper part in color, but contains few to many pockets of uncoated sand grains. It is loam, sandy loam, and sandy clay loam.

Stough Series

The Stough series consists of somewhat poorly drained soils that are slightly compact and brittle in the lower part of the subsoil. These soils formed in loamy material on upland flats and stream terraces. Slope ranges from 0 to 2 percent. Stough soils are coarse-loamy, siliceous, thermic Fragiaquic Paleudults.

Stough soils are associated with Ora, Ozan, and Savannah soils. Ora soils are on upland ridges and side slopes, are redder in the upper part of the B horizon than the Stough soils, have a fragipan, and are better drained. Ozan soils are on stream terraces, are poorly drained, and are more gray and less brown in the upper part of the subsoil. Savannah soils are on upland ridges,

are better drained, have a fine-loamy control section, and have a fragipan.

Typical pedon of Stough fine sandy loam, approximately 7 miles southeast of Mathiston, Mississippi, 90 yards south of gate on road, in pasture; NE1/4SW1/4 sec. 36, T. 19 N., R. 11 E.

Ap—0 to 5 inches; mottled dark grayish brown (10YR 4/2), grayish brown (2.5Y 5/2), and pale brown (10YR 6/3) fine sandy loam; weak fine and medium granular structure; friable; common fine roots; few fine black and brown concretions; slightly acid; abrupt smooth boundary.

E/B—5 to 9 inches; mottled yellowish brown (10YR 5/4) (B), pale brown (10YR 6/3), and grayish brown (10YR 5/2) (E) loam; weak fine and medium granular structure; friable; common fine roots; common fine black and brown concretions; slightly acid; clear irregular boundary.

Bt—9 to 17 inches; yellowish brown (10YR 5/6) loam; many medium faint pale brown (10YR 6/3) and few fine distinct gray (10YR 6/1) mottles; weak fine medium subangular blocky structure; friable; few fine roots; few patchy clay films on peds; seams of light gray loam extend through the horizon; common fine black and brown concretions; strongly acid; gradual smooth boundary.

Btx1—17 to 27 inches; mottled yellowish brown (10YR 5/6), light yellowish brown (10YR 6/4), and light brownish gray (10YR 6/2) loam; moderate coarse prismatic structure parting to moderate medium platy; friable; brown portion is about 50 percent of volume and is brittle and compact; clay films on peds; few fine roots; seams of light gray loam extend through the horizon; common fine black stains; common fine black and brown concretions; very strongly acid; gradual smooth boundary.

Btx2—27 to 34 inches; mottled yellowish brown (10YR 5/6), gray (10YR 6/1), and light olive brown (2.5Y 5/4) sandy clay loam; moderate very coarse prismatic structure parting to moderate medium subangular blocky; brownish portion is about 50 percent of volume and is brittle and compact; clay films on peds; grayish seams of sandy clay loam between prisms; few fine roots; common fine brown and black concretions; very strongly acid; gradual smooth boundary.

Btx3—34 to 52 inches; mottled yellowish brown (10YR 5/6), gray (10YR 5/1), and light olive brown (2.5Y 5/4) loam; moderate very coarse prismatic structure parting to moderate medium subangular; friable; brown portion is about 50 percent of the volume and is brittle and compact; nearly continuous clay films on peds; gray seams of sandy clay loam between the prisms; few fine roots; few fine black and brown concretions; very strongly acid; gradual smooth boundary.

Btx4—52 to 62 inches; mottled yellowish brown (10YR 5/8) and gray (10YR 5/1) sandy clay loam; moderate very coarse prismatic structure parting to moderate medium subangular blocky; firm; brown portion is about 50 percent of the volume and is brittle and compact; nearly continuous clay films on peds; gray seams of sandy clay loam between prisms; few fine roots; very strongly acid.

The soil is very strongly acid or strongly acid, except for the surface horizon in areas that have been limed. Black and brown concretions range from few to many throughout the profile.

The A horizon is dark grayish brown, grayish brown, or pale brown. The E/B horizon, where present, is mottled in shades of brown.

The Bt horizon is mottled in shades of brown and gray or has a matrix of brown or yellowish brown with few to many mottles having chroma of 2 or less. Texture is loam, fine sandy loam, or sandy clay loam. The Btx1 through the Btx4 horizons are slightly brittle and compact in 40 to 55 percent of the volume.

Sweatman Series

The Sweatman series consists of well drained soils that formed in deposits of stratified shaly clay and loamy sediment. Sweatman soils are on medium to narrow upland ridgetops and hillsides. Slope ranges from 2 to 35 percent. Sweatman soils are clayey, mixed, thermic Typic Hapludults.

Sweatman soils are associated with Providence, Ruston, Smithdale, and Tippah soils. Providence and Tippah soils, which are on upland ridges and hillsides, have a fine-silty Bt horizon. Ruston soils, which are also on upland ridges and hillsides, have a fine-loamy Bt horizon. Smithdale soils, which are on upland hillsides, also have a fine-loamy Bt horizon.

Typical pedon of Sweatman silt loam, 5 to 8 percent slopes, approximately 12 miles south of Fentress, Mississippi, 17 yards west of field road; NE1/4NW1/4 sec. 25, T. 15 N., R. 10 E.

Ap—0 to 6 inches; brown (10YR 5/3) silt loam; weak fine granular structure; very friable; many fine roots; medium acid; clear smooth boundary.

Bt1—6 to 17 inches; red (2.5YR 4/6) silty clay; moderate medium subangular and angular blocky structure; firm, plastic, sticky; common fine roots; patchy clay films on peds; strongly acid; clear smooth boundary.

Bt2—17 to 29 inches; red (2.5YR 4/6) silty clay; common medium distinct pale brown (10YR 6/3) and strong brown (7.5YR 5/6) mottles; moderate medium angular blocky structure; firm, plastic, sticky; few fine roots; patchy clay films on peds; strongly acid; clear smooth boundary.

BC—29 to 37 inches; red (2.5YR 4/6) silty clay; many coarse distinct strong brown (7.5YR 5/6) mottles; weak medium subangular blocky structure; firm, plastic, sticky; few fine roots; common fine distinct light gray fragments of shale; common fine flakes of mica; patchy clay films or pressure faces on peds; strongly acid; gradual smooth boundary.

C—37 to 62 inches; stratified layers of light brownish gray (2.5Y 6/2) weathered shale and yellowish red (5YR 5/6) and light olive brown (2.5Y 5/6) fine sandy loam; massive; firm; common fine flakes of mica; strongly acid.

The soil is very strongly acid or strongly acid, except for the surface layer in areas that have been limed.

The A horizon is very dark grayish brown, dark grayish brown, grayish brown, or brown.

An E horizon is present in some pedons.

The Bt horizon is red or yellowish red. In places, brownish mottles are in the lower part. Texture is silty clay loam, silty clay, or clay. Clay content in the upper 20 inches ranges from 35 to 55 percent.

The BC horizon is red, yellowish red, or strong brown. It is sandy loam, loam, silty clay loam, clay loam, clay, or silty clay. In some pedons this horizon is up to 25 percent shale fragments.

The C horizon is various shades of red, gray, and brown. The C horizon is stratified fine sandy loam, sandy clay loam, loam, and weathered shale fragments and is rich in mica.

Tippah Series

The Tippah series consists of moderately well drained soils that formed in a mantle of silty material and the underlying clayey material. These soils are on upland ridges and hillsides. Slope ranges from 2 to 8 percent. Tippah soils are fine-silty, mixed, thermic Aquic Paleudalfs.

Tippah soils are associated with Bude, Maben, Ora, and Sweatman soils. Bude soils are in slightly lower positions on uplands and stream terraces than the Tippah soils and have a fragipan. Maben and Sweatman soils have a B horizon that is more than 35 percent clay. Ora soils are fine-loamy in the upper part of the Bt horizon and have a fragipan.

Typical pedon of Tippah silt loam, 2 to 5 percent slopes, eroded, approximately 3 miles west of Sherwood, on west bank of field road; SW1/4SE1/4 sec. 30, T. 18 N., R. 11 E.

Ap—0 to 5 inches; dark grayish brown (10YR 4/2) silt loam; weak fine granular structure; friable; many fine roots; few medium roots; many fine worm holes; strongly acid; abrupt smooth boundary.

Bt1—5 to 9 inches; strong brown (7.5YR 5/6) silt loam; moderate fine and medium subangular blocky structure; friable; many fine roots; common medium roots; few fine worm holes; thin patchy clay films on peds; strongly acid; clear smooth boundary.

Bt2—9 to 20 inches; yellowish red (5YR 4/6) silty clay loam; moderate medium subangular blocky structure; friable; many fine roots; few fine worm holes; thin continuous clay films on peds and in pores; strongly acid; clear smooth boundary.

Bt3—20 to 28 inches; yellowish red (5YR 4/6) silt loam; many medium prominent light brownish gray (10YR 6/2) and fine prominent gray (10YR 6/1) mottles; moderate medium subangular blocky structure; friable; common fine roots; thin continuous clay films on peds; fine soft black concretions; strongly acid; abrupt smooth boundary.

2Bt1—28 to 45 inches; red (2.5YR 4/6) clay; many medium prominent pale brown (10YR 6/3) and common medium prominent gray (10YR 6/1) mottles; moderate medium subangular and angular blocky structure; firm, sticky, plastic; thin continuous clay films on peds; strongly acid; gradual smooth boundary.

2Bt2—45 to 60 inches; mottled red (2.5YR 4/6), gray (10YR 6/1), and strong brown (7.5YR 5/6) silty clay; moderate medium subangular blocky structure; firm, sticky, plastic; thin continuous clay films on peds; strongly acid.

The soil ranges from very strongly acid to medium acid throughout, except for the surface layer in areas that have been limed. The solum is more than 60 inches thick. Depth to the underlying clayey layer ranges from 20 to 35 inches.

The A horizon is pale brown, dark grayish brown, grayish brown, or yellowish brown.

The Bt1 horizon is strong brown, reddish brown, yellowish red, or red. The Bt2 and Bt3 horizons have matrix colors similar to those of the Bt1 horizon, but the Bt3 horizon contains few to many mottles of brown and gray. The Bt horizon is silt loam or silty clay loam, and the upper 20 inches is 20 to 35 percent clay and less than 15 percent fine and coarser sand.

The matrix of the 2Bt horizon is red to gray, or the horizon is mottled in shades of yellow, brown, red, or gray. It is silty clay loam, clay loam, silty clay, sandy clay, or clay.

Urbo Series

The Urbo series consists of somewhat poorly drained soils that formed in clayey alluvium on flood plains. Slope ranges from 0 to 2 percent. Urbo soils are fine, mixed, acid, thermic Aeric Haplaquepts.

Urbo soils are associated with Arkabutla, Chenneby, and Rosebloom soils. Arkabutla and Chenneby soils have less than 35 percent clay in the control section (10 to 40 inches). Rosebloom soils are in slightly lower areas on the flood plain than the Urbo soils, are poorly drained,

and have less than 35 percent clay in the control section (10 to 40 inches).

Typical pedon of Urbo silt loam, occasionally flooded, approximately 3 1/2 miles west of Reform, Mississippi; NW1/4SE1/4 sec. 11, T. 18 N., R. 10 E.

Ap—0 to 8 inches; mottled grayish brown (10YR 5/2), dark yellowish brown (10YR 4/4), and dark brown (10YR 4/3) silt loam; weak fine granular structure; friable; many fine roots; common yellowish brown stains; few fine black and brown concretions; strongly acid; abrupt smooth boundary.

Bg1—8 to 15 inches; grayish brown (10YR 5/2) silty clay loam; common medium distinct dark yellowish brown (10YR 4/4) mottles; weak medium subangular blocky structure; friable; many fine roots; few fine black and brown concretions; very strongly acid; clear smooth boundary.

Bg2—15 to 30 inches; grayish brown (10YR 5/2) silty clay; many medium distinct dark yellowish brown (10YR 4/4) mottles; weak medium subangular blocky structure; firm, plastic, sticky; few fine roots; few fine black and brown concretions; very strongly acid; clear smooth boundary.

Bg3—30 to 43 inches; grayish brown (10YR 5/2) clay; common medium distinct yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; firm, plastic, sticky; few fine roots; few fine black and brown concretions; very strongly acid; gradual smooth boundary.

Bg4—43 to 60 inches; gray (10YR 6/1) silty clay; common yellowish brown (10YR 5/6) and light olive brown (2.5Y 5/6) mottles; weak medium subangular blocky structure; firm, plastic, sticky; few fine black and brown concretions; very strongly acid.

The soil is very strongly acid or strongly acid throughout, except for the surface layer in areas that have been limed. Black and brown concretions range from none to common throughout the profile. The control section (10 to 40 inches) is 40 to 55 percent clay. The solum is more than 60 inches thick.

The A horizon is dark grayish brown, grayish brown, and dark brown.

The Bg1 horizon is dark grayish brown, grayish brown, brown, dark brown, yellowish brown, and dark yellowish brown. In most pedons this horizon has few to many mottles of gray, brown, or yellow. Texture is silt loam or silty clay loam. The Bg2, Bg3, and Bg4 horizons are dark grayish brown, grayish brown, light brownish gray, light gray, or gray silty clay or clay.

Formation of the Soils

This section discusses the factors of soil formation, relates them to the formation of the soils in Choctaw County, and explains the processes of soil formation. The factors of soil formation are parent material, climate, living organisms, relief, and time.

Parent Material

Parent material, the unconsolidated material in which soil forms, largely determines the chemical and mineralogical composition of the soil. The parent materials of the soils in Choctaw County are Coastal Plain sediments, loess, and alluvium.

The parent material in the steeper parts of the county is dominantly Coastal Plain sediments, which were originally deposited by ancient seas that covered the area. These sediments are mixtures of sand, silt, and clay. Smithdale soils formed in this kind of parent material.

The loess in this area is largely fine material derived originally from glacial rocks far to the north and carried by streams issuing from the melting ice. The material was deposited in this area by the streams and later redeposited by wind over the older Coastal Plain material.

Some of the soils in Choctaw County formed in more than one kind of parent material. Where the overlying layer of loess is thin, the upper soil horizons formed in weathered loess and the lower in Coastal Plain material. Providence soils are an example.

The soils along streams formed in alluvium washed from the surrounding uplands and redeposited by the streams on the flood plains. The alluvium is dominantly silt mixed with sand and clay. Oaklimeter soils formed in this kind of parent material.

Climate

Climate affects the physical, chemical, and biological relationships in the soil primarily through the influence of precipitation and temperature. Water dissolves minerals, supports biological activity, and transports minerals and organic residue through the soil profile. The amount of water that percolates through the soil over a broad area depends mainly on rainfall, relative humidity, and the length of the frost-free period. The amount of downward percolation is also affected by physiographic position and soil permeability. In Choctaw County rainfall is abundant, averaging about 55 inches per year. It is slightly greater in spring and summer than in fall and winter.

The climate of Choctaw County is warm and moist and presumably is similar to that which existed as the soils formed. The warm temperature influences the kind and growth of organisms and also affects the speed of physical and chemical reactions in the soil. Freezing and thawing have very little effect on weathering and soil-forming processes in this county.

Living Organisms

Micro-organisms, plants, earthworms, and all other organisms that live on and in the soil affect its formation. Bacteria, fungi, and other micro-organisms weather rock and decompose organic matter. Larger plants alter the soil climate around them. They also supply organic matter to the soil and transfer elements from the subsoil to the surface.

The kinds and numbers of plants and animals that live on and in the soil are determined mainly by climate and, to varying degrees, by parent material, relief, and age of the soil.

Not much is known of the fungi and micro-organisms in the soils of Choctaw County, except that they are mostly in the top few inches. Earthworms and other small invertebrates are more active in the surface layer, where they continually mix the soil, than in other layers. Mixing by rodents does not appear to be of much consequence in this county.

Except on the bottom lands, the native vegetation in Choctaw County was chiefly oak, hickory, and pine. On the better drained bottomland areas, the trees were lowland hardwoods, chiefly yellow-poplar, sweetgum, ash, and oak. Cypress, birch, blackgum, beech, and water-tolerant species of oak grew mainly in the wetter areas on bottom lands.

Relief

Relief, or lay of the land, affects the drainage and rate of runoff of a soil. Thus relief influences the moisture conditions in the soil and the erosion on the surface. The rate of runoff is greater on steep soils than on gently sloping or level soils. This means that the amount of water that moves through the soil during development depends partly on the relief. In level areas and depressions, the soils are likely to be wet and gray.

Relief in Choctaw County ranges from nearly level on the flood plains to steep in the uplands.

Fragipan formation is also associated with relief and drainage. This compact, brittle layer is most strongly expressed on level to gently sloping topography and under somewhat poorly drained to moderately well drained conditions. The Bude, Ora, Providence, and Savannah soils have a fragipan. A fragipan governs the depth to which roots, air, and water can penetrate, as well as the permeability and wetness of the soil.

Relief and drainage are more local in scope than other factors of soil development, and their influence on the soil can be observed within small distances. Slope is important in land use, as well as in crop production.

Time

Generally a long time is required for formation of distinct horizons in a soil. The difference in length of time that parent materials have been in place, therefore, is commonly reflected in the degree of development of the soil profile. The soils in Choctaw County range from young to old. The young soils have very little profile development, and the older soils have well expressed horizons.

Arkabutla soils are examples of young soils. They formed in medium textured to moderately fine textured material on flood plains, and they lack profile development. Chenneby soils also formed in alluvium, but are older. They are medium textured to moderately fine textured and have a weakly developed profile. Providence soils are examples of older soils that formed on uplands. They are medium textured to moderately fine textured and have distinct horizons.

Processes of Soil Horizon Differentiation

Several processes were involved in the formation of soil horizons in the soils of Choctaw County: (1) accumulation of organic matter, (2) leaching of calcium carbonate and bases, (3) reduction and transfer of iron, and (4) formation and translocation of silicate clay minerals. In most soils more than one of these processes have been active in the development of horizons.

The accumulation of organic matter in the upper part of the profile results in the formation of an A horizon. The soils of this county are low in content of organic matter.

Carbonates and bases have been leached from nearly all of the soils in this county. Leaching of bases from the upper horizons of a soil commonly precedes the translocation of silicate clay minerals. Most of the soils in this county are moderately to strongly leached.

The reduction and transfer of iron, a process called gleying, is evident in poorly drained soils of the county. Gleying is indicated by the grayish color of the horizons below the surface layer. Segregations of iron are indicated in some horizons by reddish brown mottles and concretions.

In some soils of Choctaw County, the translocation of clay minerals has contributed to horizon development. The eluviated E horizon, above the B horizon, has less clay than the B horizon and generally is lighter in color. The B horizon commonly has accumulations of clay (clay films) in pores and on ped surfaces.

The leaching of bases and subsequent translocation of silicate clay are among the more important processes of horizon differentiation in Choctaw County.

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Glossary

Aeration, soil. The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.

Aggregate, soil. Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

Alluvium. Material, such as sand, silt, or clay, deposited on land by streams.

Association, soil. A group of soils geographically associated in a characteristic repeating pattern and defined and delineated as a single map unit.

Available water capacity (available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as—

	Inches
Very low	0 to 3
Low	3 to 6
Moderate	6 to 9
High	9 to 12
Very high	more than 12

Base saturation. The degree to which material having cation exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, K), expressed as a percentage of the total cation exchange capacity.

Bedding planes. Fine stratifications, less than 5 millimeters thick, in unconsolidated alluvial, eolian, lacustrine, or marine sediments.

Bisequum. Two sequences of soil horizons, each of which consists of an illuvial horizon and the overlying eluvial horizons.

Bottom land. The normal flood plain of a stream, subject to flooding.

Broad-base terrace. A ridge-type terrace built to control erosion by diverting runoff along the contour at a nonscouring velocity. The terrace is 10 to 20 inches high and 15 to 30 feet wide and has gently sloping sides, a rounded crown, and a dish-shaped channel along the upper side. It may be nearly level or have a grade toward one or both ends.

Cation. An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.

Cation-exchange capacity. The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity, but is more precise in meaning.

Chiseling. Tillage with an implement having one or more soil-penetrating points that shatter or loosen hard compacted layers to a depth below normal plow depth.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay film. A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

Coarse fragments. If round, mineral or rock particles 2 millimeters to 25 centimeters (10 inches) in diameter; if flat, mineral or rock particles (flagstone) 15 to 38 centimeters (6 to 15 inches) long.

Coarse textured soil. Sand or loamy sand.

Complex slope. Irregular or variable slope. Planning or constructing terraces, diversions, and other water-control measures on a complex slope is difficult.

Complex, soil. A map unit of two or more kinds of soil in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils are somewhat similar in all areas.

Concretions. Grains, pellets, or nodules of various sizes, shapes, and colors consisting of concentrated compounds or cemented soil grains. The composition of most concretions is unlike that of the surrounding soil. Calcium carbonate and iron oxide are common compounds in concretions.

Consistence, soil. The feel of the soil and the ease with which a lump can be crushed by the fingers. Terms commonly used to describe consistence are—

Loose.—Noncoherent when dry or moist; does not hold together in a mass.
Friable.—When moist, crushes easily under gentle pressure between thumb and forefinger and can be pressed together into a lump.
Firm.—When moist, crushes under moderate pressure between thumb and forefinger, but resistance is distinctly noticeable.
Plastic.—When wet, readily deformed by moderate pressure but can be pressed into a lump; will form a "wire" when rolled between thumb and forefinger.
Sticky.—When wet, adheres to other material and tends to stretch somewhat and pull apart rather than to pull free from other material.
Hard.—When dry, moderately resistant to pressure; can be broken with difficulty between thumb and forefinger.
Soft.—When dry, breaks into powder or individual grains under very slight pressure.
Cemented.—Hard; little affected by moistening.

Contour stripcropping. Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Corrosive. High risk of corrosion to uncoated steel or deterioration of concrete.

Cover crop. A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Cutbanks cave (in tables). The walls of excavations tend to cave in or slough.

Deferred grazing. Postponing grazing or resting grazingland for a prescribed period.

Diversion (or diversion terrace). A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.

Drainage class (natural). Refers to the frequency and duration of periods of saturation or partial saturation during soil formation, as opposed to altered drainage, which is commonly the result of artificial drainage or irrigation but may be caused by the sudden deepening of channels or the blocking of drainage outlets. Seven classes of natural soil drainage are recognized:
Excessively drained.—Water is removed from the soil very rapidly. Excessively drained soils are commonly very coarse textured, rocky, or shallow. Some are steep. All are free of the mottling related to wetness.
Somewhat excessively drained.—Water is removed from the soil rapidly. Many somewhat excessively drained soils are sandy and rapidly pervious. Some are shallow. Some are so steep that much of the water they receive is lost as runoff. All are free of the mottling related to wetness.
Well drained.—Water is removed from the soil readily, but not rapidly. It is available to plants throughout most of the growing season, and wetness does not inhibit growth of roots for significant periods during most growing seasons. Well drained soils are commonly medium textured. They are mainly free of mottling.
Moderately well drained.—Water is removed from the soil somewhat slowly during some periods. Moderately well drained soils are wet for only a short time during the growing season, but periodically they are wet long enough that most mesophytic crops are affected. They commonly have a slowly pervious layer within or directly below the solum, or periodically receive high rainfall, or both.
Somewhat poorly drained.—Water is removed slowly enough that the soil is wet for significant periods during the growing season. Wetness markedly restricts the growth of mesophytic crops unless artificial drainage is provided. Somewhat poorly drained soils commonly have a slowly pervious layer, a high water table, additional water from seepage, nearly continuous rainfall, or a combination of these.
Poorly drained.—Water is removed so slowly that the soil is saturated periodically during the growing season or remains wet for long periods. Free water is commonly at or near the surface for long enough during the growing season that most mesophytic crops cannot be grown unless the soil is artificially drained. The soil is not continuously saturated in layers directly below plow depth. Poor drainage results from a high water table, a slowly pervious layer within the profile, seepage, nearly continuous rainfall, or a combination of these.
Very poorly drained.—Water is removed from the soil so slowly that free water remains at or on the surface during most of the growing season. Unless the soil is artificially drained, most mesophytic crops cannot be grown. Very poorly drained soils are commonly level or depressed and are frequently ponded. Yet, where rainfall is high and nearly continuous, they can have moderate or high slope gradients.

Drainage, surface. Runoff, or surface flow of water, from an area.

Eluviation. The movement of material in true solution or colloidal suspension from one place to another within the soil. Soil horizons that have lost material through eluviation are eluvial; those that have received material are illuvial.

Erosion. The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.
Erosion (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.
Erosion (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of the activities of man or other animals or of a catastrophe in nature, for example, fire, that exposes the surface.

Excess fines (in tables). Excess silt and clay in the soil. The soil is not a source of gravel or sand for construction purposes.

Fertility, soil. The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

Field moisture capacity. The moisture content of a soil, expressed as a percentage of the ovendry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity, normal moisture capacity,* or *capillary capacity*.

Fine textured soil. Sandy clay, silty clay, and clay.

First bottom. The normal flood plain of a stream, subject to frequent or occasional flooding.

Flood plain. A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

Fragipan. A loamy, brittle subsurface horizon low in porosity and content of organic matter and low or moderate in clay but high in silt or very fine sand. A fragipan appears cemented and restricts roots. When dry, it is hard or very hard and has a higher bulk density than the horizon or horizons above. When moist, it tends to rupture suddenly under pressure rather than to deform slowly.

Genesis, soil. The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

Graded stripcropping. Growing crops in strips that grade toward a protected waterway.

Grassed waterway. A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

Green manure crop (agronomy). A soil-improving crop grown to be plowed under in an early stage of maturity or soon after maturity.

Gully. A miniature valley with steep sides cut by running water and through which water ordinarily runs only after rainfall. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an upper case letter represents the major horizons. Numbers or lower case letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the *Soil Survey Manual*. The major horizons of mineral soil are as follows:
O horizon.—An organic layer of fresh and decaying plant residue at the surface of a mineral soil.
A horizon.—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.
E horizon.—The mineral horizon in which the main feature is loss of silicate clay, iron, alluminum, or some combination of these.
B horizon.—The mineral horizon below an O, A, or E horizon. The B horizon is in part a layer of transition from the overlying horizon to the underlying C horizon. The B horizon also has distinctive characteristics such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these.
C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the A or B horizon. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, the Arabic numeral 2 precedes the letter C.
R layer.—Consolidated rock beneath the soil. The rock commonly underlies a C horizon, but can be directly below an A or B horizon.

Humus. The well decomposed, more or less stable part of the organic matter in mineral soils.

Hydrologic soil groups. Refers to soils grouped according to their runoff-producing characteristics. The chief consideration is the inherent capacity of soil bare of vegetation to permit infiltration. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff. Soils are assigned to four groups. In group A are soils having a high infiltration rate when thoroughly wet and having a low runoff potential. They are mainly deep, well drained, and sandy or gravelly. In group D, at the other extreme, are soils having a very slow infiltration rate and thus a high runoff potential. They

have a claypan or clay layer at or near the surface, have a permanent high water table, or are shallow over nearly impervious bedrock or other material. A soil is assigned to two hydrologic groups if part of the acreage is artificially drained and part is undrained.

Impervious soil. A soil through which water, air, or roots penetrate slowly or not at all. No soil is absolutely impervious to air and water all the time.

Infiltration. The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

Infiltration capacity. The maximum rate at which water can infiltrate into a soil under a given set of conditions.

Infiltration rate. The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.

Leaching. The removal of soluble material from soil or other material by percolating water.

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state.

Loam. Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Loess. Fine grained material, dominantly of silt-sized particles, deposited by wind.

Low strength. The soil is not strong enough to support loads.

Medium textured soil. Very fine sandy loam, loam, silt loam, or silt.

Mineral soil. Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

Miscellaneous area. An area that has little or no natural soil and supports little or no vegetation.

Moderately coarse textured soil. Sandy loam and fine sandy loam.

Moderately fine textured soil. Clay loam, sandy clay loam, and silty clay loam.

Morphology, soil. The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

Mottling, soil. Irregular spots of different colors that vary in number and size. Mottling generally indicates poor aeration and impeded drainage. Descriptive terms are as follows: abundance—*few, common,* and *many*; size—*fine, medium,* and *coarse*; and contrast—*faint, distinct,* and *prominent*. The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium*, from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse*, more than 15 millimeters (about 0.6 inch).

Munsell notation. A designation of color by degrees of the three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color of 10YR hue, value of 6, and chroma of 4.

Neutral soil. A soil having a pH value between 6.6 and 7.3. (See Reaction, soil.)

Organic matter. Plant and animal residue in the soil in various stages of decomposition.

Pan. A compact, dense layer in a soil that impedes the movement of water and the growth of roots. For example, *hardpan, fragipan, claypan, plowpan,* and *traffic pan*.

Parent material. The unconsolidated organic and mineral material in which soil forms.

Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.

Pedon. The smallest volume that can be called "a soil." A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percolation. The downward movement of water through the soil.

Percs slowly (in tables). The slow movement of water through the soil adversely affecting the specified use.

Permeability. The quality of the soil that enables water to move downward through the profile. Permeability is measured as the number of inches per hour that water moves downward through the saturated soil. Terms describing permeability are:

Very slow	less than 0.06 inch
Slow	0.06 to 0.2 inch
Moderately slow	0.2 to 0.6 inch
Moderate	0.6 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

Phase, soil. A subdivision of a soil series based on features that affect its use and management. For example, slope, stoniness, and thickness.

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Piping (in tables). Formation of subsurface tunnels or pipelike cavities by water moving through the soil.

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plastic limit. The moisture content at which a soil changes from semisolid to plastic.

Plowpan. A compacted layer formed in the soil directly below the plowed layer.

Ponding. Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

Poorly graded. Refers to a coarse grained soil or soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.

Poor filter (in tables). Because of rapid permeability the soil may not adequately filter effluent from a waste disposal system.

Poor outlets (in tables). Refers to areas where surface or subsurface drainage outlets are difficult or expensive to install.

Productivity, soil. The capability of a soil for producing a specified plant or sequence of plants under specific management.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

Reaction, soil. A measure of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degree of acidity or alkalinity is expressed as—

	pH
Extremely acid	below 4.5
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Medium acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Mildly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

Relief. The elevations or inequalities of a land surface, considered collectively.

Rill. A steep sided channel resulting from accelerated erosion. A rill is generally a few inches deep and not wide enough to be an obstacle to farm machinery.

Rippable. Bedrock or hardpan can be excavated using a single-tooth ripping attachment mounted on a tractor with a 200-300 draw bar horsepower rating.

Rooting depth (in tables). Shallow root zone. The soil is shallow over a layer that greatly restricts roots.

Root zone. The part of the soil that can be penetrated by plant roots.

Runoff. The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Sand. As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Sandstone. Sedimentary rock containing dominantly sand-size particles.

Sedimentary rock. Rock made up of particles deposited from suspension in water. The chief kinds of sedimentary rock are conglomerate, formed from gravel; sandstone, formed from sand; shale, formed from clay; and limestone, formed from soft masses of calcium carbonate. There are many intermediate types. Some wind-deposited sand is consolidated into sandstone.

Seepage (in tables). The movement of water through the soil. Seepage adversely affects the specified use.

Series, soil. A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer or of the underlying material. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Shale. Sedimentary rock formed by the hardening of a clay deposit.

Sheet erosion. The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and surface runoff.

Shrink-swell. The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Siltstone. Sedimentary rock made up of dominantly silt-sized particles.

Site index. A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75 feet.

Slickensides. Polished and grooved surfaces produced by one mass sliding past another. In soils, slickensides may occur at the bases of slip surfaces on the steeper slopes; on faces of blocks, prisms, and columns; and in swelling clayey soils, where there is marked change in moisture content.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance.

Slope (in tables). Slope is great enough that special practices are required to insure satisfactory performance of the soil for a specific use.

Slow refill (in tables). The slow filling of ponds, resulting from restricted permeability in the soil.

Small stones (in tables). Rock fragments less than 3 inches (7.5 centimeters) in diameter. Small stones adversely affect the specified use of the soil.

Soil. A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Soil separates. Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes of separates recognized in the United States are as follows:

	Millimeters
Very coarse sand	2.0 to 1.0
Coarse sand	1.0 to 0.5
Medium sand	0.5 to 0.25
Fine sand	0.25 to 0.10
Very fine sand	0.10 to 0.05
Silt	0.05 to 0.002
Clay	less than 0.002

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A, E, and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the underlying material. The living roots and plant and animal activities are largely confined to the solum.

Stripcropping. Growing crops in a systematic arrangement of strips or bands which provide vegetative barriers to wind and water erosion.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular*. *Structureless* soils are either *single grained* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

Stubble mulch. Stubble or other crop residue left on the soil or partly worked into the soil. It protects the soil from wind and water erosion after harvest, during preparation of a seedbed for the next crop, and during the early growing period of the new crop.

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Subsoiling. Breaking up a compact subsoil by pulling a special chisel through the soil.

Subsurface layer. Technically, the A2 horizon. Generally refers to a leached horizon lighter in color and lower in content of organic matter than the overlying surface layer.

Surface layer. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the "plow layer," or the "Ap horizon."

Terrace. An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that water soaks into the soil or flows slowly to a prepared outlet.

Terrace (geologic). An old alluvial plain, ordinarily flat or undulating, bordering a river, a lake, or the sea.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

Thin layer (in tables). Otherwise suitable soil material too thin for the specified use.

Tilth, soil. The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Topsoil. The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

Trace elements. Chemical elements, for example, zinc, cobalt, manganese, copper, and iron, are in soils in extremely small amounts. They are essential to plant growth.

Unstable fill (in tables). Risk of caving or sloughing on banks of fill material.

Upland (geology). Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.

Weathering. All physical and chemical changes produced in rocks or other deposits at or near the earth's surface by atmospheric agents. These changes result in disintegration and decomposition of the material.

Well graded. Refers to soil material consisting of coarse grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

Wilting point (or permanent wilting point). The moisture content of soil, on an ovendry basis, at which a plant (specifically sunflower) wilts so much that it does not recover when placed in a humid, dark chamber.

Tables

TABLE 1.--TEMPERATURE AND PRECIPITATION

[Recorded in the period 1951-78 at Eupora, Mississippi]

Month	Temperature						Precipitation				
	Average daily maximum	Average daily minimum	Average	2 years in 10 will have-- Maximum temperature higher than--	2 years in 10 will have-- Minimum temperature lower than--	Average number of growing degree days[1]	Average	2 years in 10 will have-- Less than--	2 years in 10 will have-- More than--	Average number of days with 0.10 inch or more	Average snowfall
	°F	°F	°F	°F	°F		In	In	In		In
January----	54.4	32.2	43.3	77	7	77	5.59	3.12	7.77	8	0.5
February---	59.5	34.7	47.1	80	12	108	5.22	3.03	7.17	7	.4
March------	66.9	41.6	54.2	85	21	214	6.39	3.79	8.72	8	.0
April------	76.5	50.3	63.4	90	31	402	5.72	3.44	7.76	6	.0
May--------	83.1	57.7	70.4	95	38	632	4.48	2.26	6.40	6	.0
June-------	89.5	64.8	77.2	100	48	816	3.76	1.52	5.65	6	.0
July-------	92.3	67.8	80.1	101	56	933	4.78	2.44	6.82	7	.0
August-----	92.1	66.3	79.2	101	53	905	3.25	1.52	4.73	5	.0
September--	86.7	60.9	73.8	99	41	714	3.18	1.33	4.74	5	.0
October----	77.2	48.3	62.8	93	27	397	3.01	.56	4.89	4	.0
November---	66.1	39.2	52.7	86	17	130	3.94	1.70	5.83	5	.0
December---	57.6	34.2	45.9	78	12	70	5.64	2.96	7.97	7	.4
Year-----	75.2	49.8	62.5	104	4	5,398	54.96	45.98	63.06	74	1.3

[1]A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (50° F).

TABLE 2.--FREEZE DATES IN SPRING AND FALL

[Recorded in the period 1951-78 at Eupora, Mississippi]

Probability	Temperature		
	24° F or lower	28° F or lower	32° F or lower
Last freezing temperature in spring:			
1 year in 10 later than--	March 24	April 4	April 16
2 years in 10 later than--	March 16	March 30	April 12
5 years in 10 later than--	March 1	March 21	April 3
First freezing temperature in fall:			
1 year in 10 earlier than--	November 1	October 24	October 20
2 years in 10 earlier than--	November 6	October 28	October 23
5 years in 10 earlier than--	November 16	November 4	October 28

TABLE 3.--GROWING SEASON

[Recorded in the period 1951-78 at Eupora, Mississippi]

Probability	Daily minimum temperature during growing season		
	Higher than 24° F	Higher than 28° F	Higher than 32° F
	Days	Days	Days
9 years in 10	231	212	192
8 years in 10	241	217	198
5 years in 10	259	227	207
2 years in 10	278	237	217
1 year in 10	287	242	222

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS

Map symbol	Soil name	Acres	Percent
Ae	Ariel silt loam, occasionally flooded	1,600	0.6
Ak	Arkabutla silt loam, occasionally flooded	2,300	0.9
Ar	Arkabutla silt loam, frequently flooded	800	0.3
Bu	Bude silt loam, 0 to 2 percent slopes	2,350	0.9
Ca	Cascilla silt loam, occasionally flooded	920	0.3
Ce	Chenneby silt loam, occasionally flooded	10,450	3.9
Cf	Chenneby silt loam, frequently flooded	2,100	0.8
CH	Chenneby-Arkabutla association, frequently flooded	9,600	3.6
Gu	Guyton silt loam, occasionally flooded	1,550	0.6
Kk	Kirkville fine sandy loam, occasionally flooded	3,250	1.2
Kr	Kirkville fine sandy loam, frequently flooded	510	0.2
MaB	Maben silt loam, 2 to 5 percent slopes	470	0.2
MaC	Maben silt loam, 5 to 8 percent slopes	1,700	0.6
MaE	Maben fine sandy loam, 8 to 15 percent slopes	7,930	3.0
MP	Maben-Providence association, hilly	18,400	6.9
Mt	Mantachie loam, occasionally flooded	2,350	0.9
Mv	Mantachie loam, frequently flooded	880	0.3
Oa	Oaklimeter silt loam, occasionally flooded	19,600	7.3
OrB2	Ora loam, 2 to 5 percent slopes, eroded	1,800	0.7
OrC2	Ora loam, 5 to 8 percent slopes, eroded	10,600	4.0
OrD2	Ora loam, 8 to 12 percent slopes, eroded	21,120	7.9
OrD3	Ora loam, 8 to 12 percent slopes, severely eroded	650	0.2
Oz	Ozan loam, occasionally flooded	550	0.2
Pf	Pits-Udorthents complex	240	0.1
PoB2	Providence silt loam, 2 to 5 percent slopes, eroded	5,450	2.0
PoC2	Providence silt loam, 5 to 8 percent slopes, eroded	8,860	3.3
Ro	Rosebloom silt loam, occasionally flooded	2,030	0.8
Rs	Rosebloom silt loam, frequently flooded	1,250	0.5
RuB	Ruston fine sandy loam, 2 to 5 percent slopes	600	0.2
RuC	Ruston fine sandy loam, 5 to 8 percent slopes	3,640	1.4
SaB2	Savannah fine sandy loam, 2 to 5 percent slopes, eroded	860	0.3
SaC2	Savannah fine sandy loam, 5 to 8 percent slopes, eroded	770	0.3
SmE	Smithdale fine sandy loam, 8 to 15 percent slopes	6,110	2.3
SmF	Smithdale fine sandy loam, 15 to 35 percent slopes	3,900	1.5
SN	Smithdale-Maben association, hilly	17,840	6.7
SR	Smithdale-Ruston association, hilly	20,240	7.6
SS	Smithdale-Sweatman association, hilly	39,340	14.7
St	Stough fine sandy loam, 0 to 2 percent slopes	1,600	0.6
SwC	Sweatman silt loam, 5 to 8 percent slopes	1,400	0.5
SwE	Sweatman fine sandy loam, 8 to 15 percent slopes	7,700	2.9
SwF	Sweatman fine sandy loam, 15 to 25 percent slopes	2,100	0.8
SX	Sweatman-Providence association, hilly	11,750	4.4
TaB2	Tippah silt loam, 2 to 5 percent slopes, eroded	1,900	0.7
TaC2	Tippah silt loam, 5 to 8 percent slopes, eroded	6,700	2.5
Ur	Urbo silt loam, occasionally flooded	400	0.1
	Water	720	0.3
	Total	266,880	100.0

TABLE 5.--LAND CAPABILITY AND YIELDS PER ACRE OF CROPS AND PASTURE

[Yields are those that can be expected under a high level of management. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil]

Map symbol and soil name	Land capability	Cotton lint	Wheat	Common bermudagrass	Improved bermudagrass	Tall fescue	Bahiagrass	Soybeans
		Lbs	Bu	AUM*	AUM*	AUM*	AUM*	Bu
Ae---------- Ariel	IIw	800	35	9.0	11.0	10.0	10.5	40
Ak---------- Arkabutla	IIw	700	35	7.0	11.0	10.0	10.0	35
Ar---------- Arkabutla	IVw	---	---	6.0	10.0	9.0	9.0	20
Bu---------- Bude	IIw	625	25	6.5	9.0	7.5	8.0	25
Ca---------- Cascilla	IIw	850	35	9.0	12.0	10.0	10.0	40
Ce---------- Chenneby	IIw	700	30	7.0	10.0	10.0	10.0	35
Cf---------- Chenneby	IVw	---	---	6.0	9.0	9.0	9.0	---
CH**:								
Chenneby----------	IVw	---	---	6.0	10.0	9.0	9.0	20
Arkabutla----------	IVw	---	---	6.0	10.0	9.0	9.0	20
Gu---------- Guyton	IVw	---	---	6.5	---	6.0	9.5	23
Kk---------- Kirkville	IIw	700	30	8.0	11.0	10.5	10.0	40
Kr---------- Kirkville	Vw	---	---	6.0	9.0	8.0	7.5	---
MaB---------- Maben	IIe	550	30	5.0	8.0	8.5	8.0	25
MaC---------- Maben	IIIe	---	25	4.5	7.0	7.5	7.0	20
MaE---------- Maben	VIe	---	---	4.0	---	---	7.0	---
MP**:								
Maben----------	VIIe	---	---	---	---	---	---	---
Providence----------	VIe	---	---	6.5	---	7.0	8.5	---

See footnote at end of table.

TABLE 5.--LAND CAPABILITY AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Map symbol and soil name	Land capability	Cotton lint	Wheat	Common bermudagrass	Improved bermudagrass	Tall fescue	Bahiagrass	Soybeans
		Lbs	Bu	AUM*	AUM*	AUM*	AUM*	Bu
Mt---------- Mantachie	IIw	650	35	6.5	10.0	10.0	10.0	35
Mv---------- Mantachie	Vw	---	---	6.0	9.0	8.0	7.0	---
Oa---------- Oaklimeter	IIw	750	35	9.0	11.0	10.0	10.0	40
OrB2---------- Ora	IIe	700	35	5.5	8.5	8.0	9.0	35
OrC2---------- Ora	IIIe	600	30	5.0	8.0	7.5	8.5	30
OrD2---------- Ora	IVe	400	50	4.5	7.0	7.0	8.0	25
OrD3---------- Ora	VIe	---	---	4.0	6.0	6.0	7.0	---
Oz---------- Ozan	IVw	---	---	6.0	8.0	5.5	6.5	20
Pf---------- Pits-Udorthents	---	---	---	---	---	---	---	---
PoB2---------- Providence	IIe	700	30	7.5	9.5	8.5	8.5	35
PoC2---------- Providence	IIIe	650	25	7.0	9.0	7.5	8.0	30
Ro---------- Rosebloom	IIIw	550	25	---	8.0	8.0	---	30
Rs---------- Rosebloom	Vw	---	---	---	7.0	7.0	---	---
RuB---------- Ruston	IIe	650	35	5.5	12.0	---	9.5	25
RuC---------- Ruston	IIIe	600	30	5.5	12.0	---	9.0	23
SaB2---------- Savannah	IIe	650	35	5.5	8.5	8.0	9.0	35
SaC2---------- Savannah	IIIe	600	30	5.0	8.0	7.5	9.0	30

See footnote at end of table.

TABLE 5.--LAND CAPABILITY AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Map symbol and soil name	Land capability	Cotton lint	Wheat	Common bermudagrass	Improved bermudagrass	Tall fescue	Bahiagrass	Soybeans
		Lbs	Bu	AUM*	AUM*	AUM*	AUM*	Bu
SmE---------- Smithdale	VIe	---	---	4.5	9.0	7.0	7.0	---
SmF---------- Smithdale	VIIe	---	---	---	---	---	---	---
SN**:								
Smithdale----------	VIIe	---	---	---	---	---	---	---
Maben----------	VIIe	---	---	---	---	---	---	---
SR**:								
Smithdale----------	VIIe	---	---	---	---	---	---	---
Ruston----------	IIIe	600	---	---	---	---	---	---
SS**:								
Smithdale----------	VIIe	---	---	---	---	---	---	---
Sweatman----------	VIIe	---	---	---	---	---	---	---
St---------- Stough	IIw	725	25	5.5	8.0	8.0	8.0	25
SwC---------- Sweatman	IVe	---	30	4.0	7.0	---	6.0	---
SwE---------- Sweatman	VIIe	---	---	3.5	6.5	---	5.5	---
SwF---------- Sweatman	VIIe	---	---	---	---	---	---	---
SX**:								
Sweatman----------	VIIe	---	---	---	---	---	---	---
Providence---------	VIe	---	---	5.5	8.5	6.5	8.0	---
TaB2---------- Tippah	IIe	650	35	7.5	10.0	8.5	9.0	35
TaC2---------- Tippah	IIIe	600	30	7.0	9.0	7.5	8.0	30
Ur---------- Urbo	IIw	700	25	8.0	12.0	11.0	8.5	35

* Animal-unit-month: The amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for 30 days.

** See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 6.--CAPABILITY CLASSES AND SUBCLASSES

[Miscellaneous areas are excluded. Absence of an entry indicates no acreage]

Class	Total acreage	Major management concerns (Subclass)	
		Erosion (e)	Wetness (w)
		Acres	Acres
I	---	---	---
II	55,300	10,480	44,820
III	38,745	36,715	2,030
IV	51,160	36,560	14,600
V	2,640	---	2,640
VI	16,240	16,240	---
VII	101,833	101,833	---
VIII	---	---	---

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY

[Only the soils suitable for production of commercial trees are listed. Absence of an entry indicates that information was not available]

Map symbol and soil name	Ordination symbol	Management concerns				Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Plant competition	Common trees	Site index	
Ae---------- Ariel	1o7	Slight	Slight	Slight	Moderate	Cherrybark oak------ Eastern cottonwood-- Loblolly pine------- Sweetgum---------- Water oak---------- Yellow-poplar-------	110 115 95 100 105 110	Cherrybark oak, eastern cottonwood, loblolly pine, sweetgum, water oak, yellow-poplar.
Ak---------- Arkabutla	1w8	Slight	Moderate	Slight	Moderate	Cherrybark oak------ Eastern cottonwood-- Green ash---------- Loblolly pine------- Nuttall oak--------- Sweetgum---------- Water oak---------- Willow oak----------	105 110 95 100 110 100 100 100	Cherrybark oak, eastern cottonwood, green ash, loblolly pine, sweetgum, American sycamore.
Ar---------- Arkabutla	1w9	Slight	Severe	Moderate	Moderate	Cherrybark oak------ Eastern cottonwood-- Green ash---------- Loblolly pine------- Nuttall oak--------- Sweetgum---------- Water oak----------	105 110 95 100 110 100 100	Cherrybark oak, eastern cottonwood, green ash, loblolly pine, sweetgum, American sycamore.
Bu---------- Bude	2w8	Slight	Moderate	Slight	Moderate	Cherrybark oak------ Loblolly pine------- Sweetgum----------	90 90 90	Cherrybark oak, Shumard oak, loblolly pine, sweetgum, yellow-poplar.
Ca---------- Cascilla	1o7	Slight	Slight	Slight	Moderate	Cherrybark oak------ Eastern cottonwood-- Loblolly pine------- Nuttall oak--------- Water oak---------- Sweetgum---------- Yellow-poplar-------	112 110 93 114 104 102 115	Cherrybark oak, eastern cottonwood, loblolly pine, Nuttall oak, sweetgum, American sycamore, yellow-poplar.
Ce, Cf---------- Chenneby	1w8	Slight	Moderate	Moderate	Severe	Loblolly pine------- Sweetgum---------- Water oak---------- Yellow-poplar------- American sycamore---	100 100 100 110 110	Loblolly pine, yellow-poplar, sweetgum, water oak, American sycamore.
CH*: Chenneby----------	1w8	Slight	Moderate	Moderate	Severe	Loblolly pine------- Sweetgum---------- Water oak---------- Yellow-poplar------- American sycamore---	100 100 100 110 110	Loblolly pine, yellow-poplar, sweetgum, water oak, American sycamore.
Arkabutla---------	1w9	Slight	Severe	Moderate	Moderate	Cherrybark oak------ Eastern cottonwood-- Green ash---------- Loblolly pine------- Nuttall oak--------- Sweetgum---------- Water oak----------	105 110 95 100 110 100 100	Cherrybark oak, eastern cottonwood, green ash, loblolly pine, sweetgum, American sycamore.
Gu---------- Guyton	2w9	Slight	Severe	Moderate	Severe	Loblolly pine------- Slash pine---------- Sweetgum---------- Green ash---------- Southern red oak----- Water oak----------	90 90 --- --- --- ---	Loblolly pine, sweetgum.

See footnote at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Map symbol and soil name	Ordination symbol	Management concerns				Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Plant competition	Common trees	Site index	
Kk Kirkville	1w8	Slight	Moderate	Moderate	Moderate	Cherrybark oak Loblolly pine Sweetgum Water oak	100 95 100 100	Cherrybark oak, eastern cottonwood, loblolly pine, sweetgum, yellow-poplar.
Kr Kirkville	1w9	Slight	Severe	Severe	Moderate	Cherrybark oak Loblolly pine Sweetgum Water oak	100 95 100 100	Cherrybark oak, eastern cottonwood, loblolly pine, sweetgum, yellow-poplar.
MaB, MaC, MaE Maben	3c2	Slight	Moderate	Moderate	Slight	Loblolly pine Shortleaf pine	83 73	Loblolly pine, shortleaf pine.
MP*: Maben	3c2	Slight	Moderate	Moderate	Slight	Loblolly pine Shortleaf pine	83 73	Loblolly pine, shortleaf pine.
Providence	3o7	Slight	Slight	Slight	Slight	Loblolly pine Shortleaf pine Sweetgum	84 64 90	Loblolly pine, Shumard oak, sweetgum, yellow-poplar.
Mt Mantachie	1w8	Slight	Severe	Moderate	Severe	Green ash Eastern cottonwood Cherrybark oak Loblolly pine Sweetgum Yellow-poplar	80 90 100 98 95 95	Green ash, eastern cottonwood, cherrybark oak, loblolly pine, sweetgum, yellow-poplar.
Mv Mantachie	1w9	Slight	Severe	Severe	Severe	Green ash Eastern cottonwood Cherrybark oak Loblolly pine Sweetgum Yellow-poplar	80 90 100 98 95 95	Green ash, eastern cottonwood, cherrybark oak, loblolly pine, sweetgum, yellow-poplar.
Oa Oaklimeter	1o7	Slight	Slight	Slight	Moderate	Cherrybark oak Eastern cottonwood Green ash Loblolly pine Nuttall oak Willow oak Sweetgum	100 100 90 90 100 100 100	Cherrybark oak, eastern cottonwood, loblolly pine, Nuttall oak, sweetgum, water oak, yellow-poplar.
OrB2, OrC2, OrD2, OrD3 Ora	3o7	Slight	Slight	Slight	Moderate	Loblolly pine Shortleaf pine Sweetgum	83 69 80	Loblolly pine, slash pine.
Oz Ozan	2w9	Slight	Severe	Severe	Severe	Loblolly pine Shortleaf pine Sweetgum Water oak Cherrybark oak Shumard oak Eastern cottonwood	95 --- 90 90 --- --- ---	Loblolly pine, Shumard oak, sweetgum, American sycamore, eastern cottonwood.
PoB2, PoC2 Providence	3o7	Slight	Slight	Slight	Slight	Loblolly pine Shortleaf pine Sweetgum	84 64 90	Loblolly pine, Shumard oak, sweetgum, yellow-poplar.

See footnote at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Map symbol and soil name	Ordination symbol	Management concerns				Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Plant competition	Common trees	Site index	
Ro, Rs---------- Rosebloom	2w9	Slight	Severe	Moderate	Moderate	Green ash----------	95	Green ash, eastern cottonwood, cherrybark oak, Nuttall oak, water oak, willow oak, loblolly pine, sweetgum.
						Eastern cottonwood--	100	
						Cherrybark oak------	95	
						Nuttall oak---------	95	
						Water oak----------	95	
						Willow oak---------	90	
						Sweetgum-----------	95	
						American sycamore---	80	
RuB, RuC---------- Ruston	3o1	Slight	Slight	Slight	Slight	Loblolly pine-------	84	Loblolly pine.
						Shortleaf pine------	75	
SaB2, SaC2--------- Savannah	3o7	Slight	Slight	Slight	Moderate	Loblolly pine-------	81	Loblolly pine, slash pine.
						Shortleaf pine------	76	
						Southern red oak----	75	
SmE, SmF---------- Smithdale	3o1	Slight	Slight	Slight	Moderate	Loblolly pine-------	80	Loblolly pine.
						Shortleaf pine------	69	
SN*:								
Smithdale---------	3o1	Slight	Slight	Slight	Moderate	Loblolly pine-------	80	Loblolly pine.
						Shortleaf pine------	69	
Maben-------------	3c2	Slight	Moderate	Moderate	Slight	Loblolly pine-------	83	Loblolly pine, shortleaf pine.
						Shortleaf pine------	73	
SR*:								
Smithdale---------	3o1	Slight	Slight	Slight	Moderate	Loblolly pine-------	80	Loblolly pine.
						Shortleaf pine------	69	
Ruston------------	3o1	Slight	Slight	Slight	Moderate	Loblolly pine-------	84	Loblolly pine.
						Shortleaf pine------	75	
SS*:								
Smithdale---------	3o1	Slight	Slight	Slight	Moderate	Loblolly pine-------	80	Loblolly pine.
						Shortleaf pine------	69	
Sweatman----------	3c2	Slight	Moderate	Slight	Slight	Loblolly pine-------	83	Loblolly pine, shortleaf pine.
						Shortleaf pine------	73	
St---------- Stough	2w8	Slight	Moderate	Slight	Moderate	Cherrybark oak------	85	Loblolly pine, slash pine, sweetgum.
						Loblolly pine-------	90	
						Slash pine----------	86	
						Sweetgum-----------	85	
						Water oak----------	80	
SwC, SwE, SwF------ Sweatman	3c2	Slight	Moderate	Slight	Slight	Loblolly pine-------	83	Loblolly pine, shortleaf pine.
						Shortleaf pine------	73	
SX*:								
Sweatman----------	3c2	Slight	Moderate	Slight	Slight	Loblolly pine-------	83	Loblolly pine, shortleaf pine.
						Shortleaf pine------	73	
Providence--------	3o7	Slight	Slight	Slight	Slight	Loblolly pine-------	84	Loblolly pine, Shumard oak, sweetgum, yellow-poplar.
						Shortleaf pine------	64	
						Sweetgum-----------	90	
TaB2, TaC2--------- Tippah	3o7	Slight	Slight	Slight	Moderate	Cherrybark oak------	95	Cherrybark oak, Shumard oak, loblolly pine, sweetgum, yellow-poplar.
						Shumard oak---------	95	
						White oak----------	80	
						Loblolly pine-------	78	
						Sweetgum-----------	90	
						Yellow-poplar-------	90	

See footnote at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Map symbol and soil name	Ordination symbol	Management concerns				Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Plant competition	Common trees	Site index	
Ur---------- Urbo	1w6	Slight	Moderate	Slight	Moderate	Green ash---------- Eastern cottonwood-- Cherrybark oak------ Sweetgum----------	93 108 99 98	Eastern cottonwood, loblolly pine, sweetgum, American sycamore, yellow-poplar.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 8.--WOODLAND UNDERSTORY VEGETATION

[Only the soils suitable for production of commercial trees are listed]

Map symbol and soil name	Total production	Characteristic vegetation	Composition
	Lb/acre		Pct
Ae---------- Ariel	1,600	Beaked panicum----------	31
		Pinehill bluestem----------	25
		Switchcane----------	20
		Longleaf uniola----------	16
Ak, Ar---------- Arkabutla	1,500	Pinehill bluestem----------	33
		Switchcane----------	26
		Longleaf uniola----------	17
Bu---------- Bude	1,500	Pinehill bluestem----------	33
		Switchcane----------	27
		Longleaf uniola----------	20
Ca---------- Cascilla	1,600	Beaked panicum----------	31
		Pinehill bluestem----------	25
		Longleaf uniola----------	16
Ce, Cf---------- Chenneby	1,500	Pinehill bluestem----------	33
		Switchcane----------	27
		Longleaf uniola----------	17
CH*:			
Chenneby----------	1,500	Pinehill bluestem----------	33
		Switchcane----------	27
		Longleaf uniola----------	17
Arkabutla---------	1,500	Pinehill bluestem----------	33
		Switchcane----------	27
		Longleaf uniola----------	17
Gu---------- Guyton	2,000	Pinehill bluestem----------	20
		Chalky bluestem----------	35
		Silver plumegrass----------	10
Kk, Kr---------- Kirkville	1,600	Switchgrass----------	10
		Longleaf uniola----------	38
		Pinehill bluestem----------	25
MaB, MaC, MaE------ Maben	800	Pinehill bluestem----------	25
		Cutover muhly----------	17
		Longleaf uniola----------	17
		Beaked panicum----------	9
MP*:			
Maben----------	800	Pinehill bluestem----------	25
		Cutover muhly----------	17
		Longleaf uniola----------	17
		Beaked panicum----------	9
Providence--------	1,600	Beaked panicum----------	26
		Pinehill bluestem----------	21
		Longleaf uniola----------	16
		Switchcane----------	16
Mt, Mv---------- Mantachie	1,600	Longleaf uniola----------	25
		Pinehill bluestem----------	25
Oa---------- Oaklimeter	1,600	Beaked panicum----------	31
		Pinehill bluestem----------	25
		Switchcane----------	20
		Longleaf uniola----------	16

See footnote at end of table.

TABLE 8.--WOODLAND UNDERSTORY VEGETATION--Continued

Map symbol and soil name	Total production	Characteristic vegetation	Composition
	Lb/acre		Pct
OrB2, OrC2, OrD2, OrD3---------- Ora	1,400	Longleaf uniola----------	30
		Pinehill bluestem----------	20
		Beaked panicum----------	15
		Switchgrass----------	5
		Broomsedge bluestem----------	5
Oz---------- Ozan	2,000	Beaked panicum----------	29
		Bluestem----------	22
		Panicum----------	11
		Switchgrass----------	8
		Longleaf uniola----------	8
PoB2, PoC2---------- Providence	1,600	Beaked panicum----------	31
		Pinehill bluestem----------	25
		Longleaf uniola----------	16
		Switchcane----------	16
Ro, Rs---------- Rosebloom	1,500	Switchcane----------	26
		Longleaf uniola----------	16
		Beaked panicum----------	12
		Pinehill bluestem----------	30
RuB, RuC---------- Ruston	1,400	Longleaf uniola----------	40
		Pinehill bluestem----------	25
		Beaked panicum----------	10
		Panicum----------	10
SaB2, SaC2---------- Savannah	1,000	Longleaf uniola----------	40
		Pinehill bluestem----------	20
		Beaked panicum----------	15
		Panicum----------	10
SmE, SmF---------- Smithdale	1,200	Longleaf uniola----------	30
		Pinehill bluestem----------	17
		Beaked panicum----------	12
		Panicum----------	12
SN*:			
Smithdale----------	800	Longleaf uniola----------	40
		Pinehill bluestem----------	25
		Beaked panicum----------	12
		Panicum----------	12
Maben----------	1,200	Pinehill bluestem----------	25
		Cutover muhly----------	17
		Longleaf uniola----------	17
		Beaked panicum----------	9
SR*:			
Smithdale----------	1,200	Longleaf uniola----------	40
		Pinehill bluestem----------	25
		Beaked panicum----------	12
		Panicum----------	12
Ruston----------	1,200	Longleaf uniola----------	40
		Pinehill bluestem----------	25
		Beaked panicum----------	10
		Panicum----------	10
SS*:			
Smithdale----------	1,200	Longleaf uniola----------	40
		Pinehill bluestem----------	25
		Beaked panicum----------	12
		Panicum----------	12

See footnote at end of table.

TABLE 8.--WOODLAND UNDERSTORY VEGETATION--Continued

Map symbol and soil name	Total production	Characteristic vegetation	Composition
	Lb/acre		Pct
SS*:			
Sweatman	800	Pinehill bluestem	30
		Beaked panicum	18
		Panicum	15
St	1,800	Pinehill bluestem	30
Stough		Longleaf uniola	30
		Beaked panicum	15
SwC, SwE, SwF	800	Pinehill bluestem	30
Sweatman		Beaked panicum	18
		Panicum	15
SX*:			
Sweatman	800	Pinehill bluestem	30
		Beaked panicum	18
		Panicum	15
Providence	1,600	Beaked panicum	31
		Pinehill bluestem	25
		Longleaf uniola	16
		Switchcane	16
TaB2, TaC2	1,600	Longleaf uniola	20
Tippah		Beaked panicum	31
		Panicum	8
		Pinehill bluestem	25
Ur	1,250	Pinehill bluestem	24
Urbo		Cutover muhly	10
		Longleaf uniola	10

* See description of map unit for composition and behavior characteristics of the map unit.

TABLE 9.--RECREATIONAL DEVELOPMENT

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated]

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
Ae--- Ariel	Severe: flooding.	Moderate: wetness, percs slowly.	Moderate: wetness, flooding, percs slowly.	Slight---	Moderate: flooding.
Ak--- Arkabutla	Severe: flooding, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Severe: wetness.
Ar--- Arkabutla	Severe: flooding, wetness.	Moderate: flooding, wetness.	Severe: flooding, wetness.	Moderate: flooding, wetness.	Severe: flooding, wetness.
Bu--- Bude	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Ca--- Cascilla	Severe: flooding.	Slight---	Moderate: flooding.	Slight---	Moderate: flooding.
Ce--- Chenneby	Severe: flooding, wetness.	Moderate: wetness.	Severe: wetness.	Severe: erodes easily.	Moderate: wetness, flooding.
Cf--- Chenneby	Severe: flooding, wetness.	Moderate: flooding, wetness.	Severe: wetness, flooding.	Severe: erodes easily.	Severe: flooding.
CH*:					
Chenneby---	Severe: flooding, wetness.	Moderate: flooding, wetness.	Severe: wetness, flooding.	Severe: erodes easily.	Severe: flooding.
Arkabutla---	Severe: flooding, wetness.	Moderate: flooding, wetness.	Severe: flooding, wetness.	Moderate: flooding, wetness.	Severe: flooding, wetness.
Gu--- Guyton	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, erodes easily.	Severe: wetness.
Kk--- Kirkville	Severe: flooding.	Moderate: wetness.	Moderate: wetness, flooding.	Moderate: wetness.	Moderate: wetness, flooding.
Kr--- Kirkville	Severe: flooding.	Moderate: flooding, wetness.	Severe: flooding.	Moderate: wetness, flooding.	Severe: flooding.
MaB--- Maben	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, percs slowly.	Slight---	Slight.
MaC--- Maben	Moderate: percs slowly.	Moderate: percs slowly.	Severe: slope.	Slight---	Slight.
MaE--- Maben	Moderate: slope, percs slowly.	Moderate: slope, percs slowly.	Severe: slope.	Severe: erodes easily.	Moderate: slope.

See footnote at end of table.

TABLE 9.--RECREATIONAL DEVELOPMENT--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
MP*:					
Maben	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily, slope.	Severe: slope.
Providence	Moderate: slope, wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Severe: slope.	Severe: erodes easily.	Moderate: wetness, slope.
Mt Mantachie	Severe: flooding, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness, flooding.
Mv Mantachie	Severe: flooding, wetness.	Moderate: flooding, wetness.	Severe: wetness, flooding.	Moderate: wetness, flooding.	Severe: flooding.
Oa Oaklimeter	Severe: flooding.	Moderate: wetness.	Moderate: wetness, flooding.	Moderate: wetness.	Moderate: wetness, flooding.
OrB2 Ora	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Slight	Moderate: droughty.
OrC2 Ora	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Severe: slope.	Slight	Moderate: droughty.
OrD2, OrD3 Ora	Moderate: slope, wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Severe: slope.	Slight	Moderate: droughty, slope.
Oz Ozan	Severe: flooding, wetness.	Moderate: wetness, percs slowly.	Severe: wetness.	Moderate: wetness.	Moderate: wetness, flooding.
Pf*:					
Pits.					
Udorthents.					
PoB2 Providence	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Slight	Moderate: wetness.
PoC2 Providence	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Severe: slope.	Slight	Moderate: wetness.
Ro Rosebloom	Severe: flooding, wetness.	Moderate: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Rs Rosebloom	Severe: flooding, wetness.	Moderate: flooding, wetness, percs slowly.	Severe: wetness, flooding.	Severe: wetness.	Severe: wetness, flooding.

See footnote at end of table.

TABLE 9.--RECREATIONAL DEVELOPMENT--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
RuB---------- Ruston	Slight----------	Slight----------	Moderate: slope, small stones.	Slight----------	Slight.
RuC---------- Ruston	Slight----------	Slight----------	Severe: slope.	Slight----------	Slight.
SaB2---------- Savannah	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Moderate: wetness.	Moderate: wetness, droughty.
SaC2---------- Savannah	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Severe: slope.	Moderate: wetness.	Moderate: wetness, droughty.
SmE---------- Smithdale	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight----------	Moderate: slope.
SmF---------- Smithdale	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
SN*: Smithdale----------	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
Maben----------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily, slope.	Severe: slope.
SR*: Smithdale----------	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
Ruston----------	Slight----------	Slight----------	Moderate: slope, small stones.	Slight----------	Slight.
SS*: Smithdale----------	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
Sweatman----------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
St---------- Stough	Severe: wetness.	Moderate: wetness, percs slowly.	Severe: wetness.	Moderate: wetness.	Moderate: wetness, droughty.
SwC---------- Sweatman	Moderate: percs slowly.	Moderate: percs slowly.	Severe: slope.	Slight----------	Slight.
SwE---------- Sweatman	Moderate: slope, percs slowly.	Moderate: slope, percs slowly.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
SwF---------- Sweatman	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
SX*: Sweatman----------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.

See footnote at end of table.

TABLE 9.--RECREATIONAL DEVELOPMENT--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
SX*: Providence	Moderate: slope, wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Severe: slope.	Severe: erodes easily.	Moderate: wetness, slope.
TaB2 Tippah	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Slight	Slight.
TaC2 Tippah	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Severe: slope.	Slight	Slight.
Ur Urbo	Severe: flooding, wetness, percs slowly.	Severe: percs slowly.	Severe: wetness.	Moderate: flooding, wetness.	Severe: too clayey.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 10.--WILDLIFE HABITAT

[See text for definitions of "good," "fair," "poor," and "very poor." Absence of an entry indicates that the soil was not rated]

Map symbol and soil name	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
Ae--- Ariel	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Ak--- Arkabutla	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
Ar--- Arkabutla	Poor	Fair	Fair	Good	Good	Fair	Fair	Fair	Good	Fair.
Bu--- Bude	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
Ca--- Cascilla	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Ce--- Chenneby	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
Cf--- Chenneby	Poor	Fair	Fair	Good	Good	Fair	Fair	Fair	Good	Fair.
CH*:										
Chenneby---	Poor	Fair	Fair	Good	Good	Fair	Fair	Fair	Good	Fair.
Arkabutla---	Poor	Fair	Fair	Good	Good	Fair	Fair	Fair	Good	Fair.
Gu--- Guyton	Fair	Fair	Fair	Fair	---	Good	Good	Fair	Fair	Good.
Kk--- Kirkville	Good	Good	Good	Good	---	Poor	Poor	Good	Good	Poor.
Kr--- Kirkville	Poor	Good	Good	Good	---	Poor	Poor	Fair	Good	Poor.
MaB--- Maben	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
MaC, MaE--- Maben	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
MP*:										
Maben---	Poor	Fair	Fair	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Providence---	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Mt--- Mantachie	Fair	Good	Good	Good	---	Fair	Fair	Good	Good	Fair.
Mv--- Mantachie	Poor	Fair	Fair	Good	---	Fair	Fair	Fair	Good	Fair.
Oa--- Oaklimeter	Good	Good	Good	Good	Poor	Poor	Poor	Good	Good	Poor.
OrB2--- Ora	Good	Good	Good	Good	---	Poor	Poor	Good	Good	Poor.
OrC2, OrD2, OrD3--- Ora	Fair	Good	Good	Good	---	Very poor.	Very poor.	Good	Good	Very poor.

See footnote at end of table.

TABLE 10.--WILDLIFE HABITAT--Continued

Map symbol and soil name	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
Oz---------- Ozan	Poor	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
Pf*: Pits.										
Udorthents.										
PoB2---------- Providence	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
PoC2---------- Providence	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Ro---------- Rosebloom	Poor	Fair	Good	Fair	---	Good	Good	Fair	Fair	Good.
Rs---------- Rosebloom	Poor	Fair	Fair	Fair	---	Good	Good	Fair	Fair	Good.
RuB---------- Ruston	Good	Good	Good	---	Good	Poor	Very poor.	Good	Good	Very poor.
RuC---------- Ruston	Fair	Good	Good	---	Good	Very poor.	Very poor.	Good	Good	Very poor.
SaB2---------- Savannah	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
SaC2---------- Savannah	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
SmE---------- Smithdale	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
SmF---------- Smithdale	Very poor.	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
SN*: Smithdale---------	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Maben----------	Poor	Fair	Fair	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
SR*: Smithdale---------	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Ruston----------	Fair	Good	Good	---	Good	Very poor.	Very poor.	Good	Good	Very poor.
SS*: Smithdale---------	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Sweatman----------	Poor	Fair	Good	Good	---	Very poor.	Very poor.	Fair	Good	Very poor.
St---------- Stough	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
SwC, SwE---------- Sweatman	Fair	Good	Good	Good	---	Poor	Very poor.	Good	Good	Very poor.

See footnote at end of table.

TABLE 10.--WILDLIFE HABITAT--Continued

Map symbol and soil name	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
SwF---------- Sweatman	Poor	Fair	Good	Good	---	Very poor.	Very poor.	Fair	Good	Very poor.
SX*:										
Sweatman----------	Poor	Fair	Good	Good	---	Very poor.	Very poor.	Fair	Good	Very poor.
Providence--------	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
TaB2---------- Tippah	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
TaC2---------- Tippah	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Ur---------- Urbo	Fair	Good	Fair	Good	---	Good	Good	Fair	Good	Good.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 11.--BUILDING SITE DEVELOPMENT

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition; it does not eliminate the need for onsite investigation]

Map symbol and soil name	Shallow excavations	Dwellings without basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
Ae---------- Ariel	Moderate: wetness, flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: flooding.
Ak---------- Arkabutla	Severe: wetness.	Severe: flooding.	Severe: flooding.	Severe: low strength, flooding.	Severe: wetness.
Ar---------- Arkabutla	Severe: wetness.	Severe: flooding.	Severe: flooding.	Severe: low strength, flooding.	Severe: flooding, wetness.
Bu---------- Bude	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, wetness.	Severe: wetness.
Ca---------- Cascilla	Moderate: flooding.	Severe: flooding.	Severe: flooding.	Severe: low strength, flooding.	Moderate: flooding.
Ce---------- Chenneby	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, flooding.	Moderate: wetness, flooding.
Cf---------- Chenneby	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, flooding.	Severe: flooding.
CH*: Chenneby---------	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, flooding.	Severe: flooding.
Arkabutla--------	Severe: wetness.	Severe: flooding.	Severe: flooding.	Severe: low strength, flooding.	Severe: flooding, wetness.
Gu---------- Guyton	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, wetness, flooding.	Severe: wetness.
Kk---------- Kirkville	Severe: wetness.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: wetness, flooding.
Kr---------- Kirkville	Severe: wetness.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.
MaB---------- Maben	Moderate: too clayey.	Severe: shrink-swell.	Moderate: shrink-swell.	Severe: low strength.	Slight.
MaC---------- Maben	Moderate: too clayey.	Severe: shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength.	Slight.
MaE---------- Maben	Moderate: too clayey, slope.	Severe: shrink-swell.	Severe: slope.	Severe: low strength.	Moderate: slope.

See footnote at end of table.

TABLE 11.--BUILDING SITE DEVELOPMENT--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
MP*:					
Maben	Severe: slope.	Severe: shrink-swell, slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.
Providence	Severe: wetness.	Moderate: wetness, shrink-swell, slope.	Severe: slope.	Severe: low strength.	Moderate: wetness, slope.
Mt Mantachie	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding.	Moderate: wetness, flooding.
My Mantachie	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding.	Severe: flooding.
Oa Oaklimeter	Severe: wetness.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: wetness, flooding.
OrB2 Ora	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: low strength, wetness.	Slight.
OrC2 Ora	Severe: wetness.	Moderate: wetness.	Moderate: wetness, slope.	Moderate: low strength, wetness.	Slight.
OrD2, OrD3 Ora	Severe: wetness.	Moderate: wetness, slope.	Severe: slope.	Moderate: low strength, wetness, slope.	Moderate: slope.
Oz Ozan	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding.	Moderate: wetness, flooding.
Pf*:					
Pits.					
Udorthents.					
PoB2 Providence	Severe: wetness.	Moderate: wetness, shrink-swell.	Moderate: wetness, shrink-swell.	Severe: low strength.	Moderate: wetness.
PoC2 Providence	Severe: wetness.	Moderate: wetness, shrink-swell.	Moderate: wetness, shrink-swell, slope.	Severe: low strength.	Moderate: wetness.
Ro Rosebloom	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, flooding.	Severe: wetness.
Rs Rosebloom	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, flooding.	Severe: wetness, flooding.
RuB Ruston	Slight	Slight	Slight	Moderate: low strength.	Slight.
RuC Ruston	Slight	Slight	Moderate: slope.	Moderate: low strength.	Slight.

See footnote at end of table.

TABLE 11.--BUILDING SITE DEVELOPMENT--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
SaB2---------- Savannah	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.
SaC2---------- Savannah	Severe: wetness.	Moderate: wetness.	Moderate: wetness, slope.	Moderate: wetness.	Moderate: wetness.
SmE---------- Smithdale	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope.
SmF---------- Smithdale	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
SN*: Smithdale--------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Maben----------	Severe: slope.	Severe: shrink-swell, slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.
SR*: Smithdale--------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Ruston----------	Slight----------	Slight----------	Moderate: slope.	Moderate: low strength.	Slight.
SS*: Smithdale--------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Sweatman---------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.
St---------- Stough	Severe: wetness.	Severe: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
SwC---------- Sweatman	Moderate: too clayey.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength.	Slight.
SwE---------- Sweatman	Moderate: too clayey, slope.	Moderate: shrink-swell, slope.	Severe: slope.	Severe: low strength.	Moderate: slope.
SwF---------- Sweatman	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.
SX*: Sweatman---------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.
Providence-------	Severe: wetness.	Moderate: wetness, shrink-swell, slope.	Severe: slope.	Severe: low strength.	Moderate: wetness, slope.
TaB2---------- Tippah	Severe: wetness.	Severe: shrink-swell.	Moderate: wetness, shrink-swell.	Severe: low strength.	Slight.

See footnote at end of table.

TABLE 11.--BUILDING SITE DEVELOPMENT--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
TaC2---------- Tippah	Severe: wetness.	Severe: shrink-swell.	Moderate: wetness, shrink-swell, slope.	Severe: low strength.	Slight.
Ur---------- Urbo	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, flooding.	Severe: too clayey.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 12.--SANITARY FACILITIES

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," "good," "fair," and other terms. Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition; it does not eliminate the need for onsite investigation]

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
Ae---------- Ariel	Severe: flooding, wetness, percs slowly.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Fair: wetness.
Ak, Ar---------- Arkabutla	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness.
Bu---------- Bude	Severe: wetness, percs slowly.	Slight----------	Severe: wetness.	Severe: wetness.	Poor: hard to pack, wetness.
Ca---------- Cascilla	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Good.
Ce, Cf---------- Chenneby	Severe: flooding, wetness.	Severe: seepage, flooding, wetness.	Severe: flooding, seepage, wetness.	Severe: flooding, wetness.	Poor: hard to pack, wetness.
CH*: Chenneby----------	Severe: flooding, wetness.	Severe: seepage, flooding, wetness.	Severe: flooding, seepage, wetness.	Severe: flooding, wetness.	Poor: hard to pack, wetness.
Arkabutla----------	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness.
Gu---------- Guyton	Severe: flooding, wetness, percs slowly.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
Kk, Kr---------- Kirkville	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Fair: wetness.
MaB, MaC---------- Maben	Severe: percs slowly.	Moderate: slope.	Slight----------	Slight----------	Good.
MaE---------- Maben	Severe: percs slowly.	Severe: slope.	Moderate: slope.	Moderate: slope.	Fair: slope.
MP*: Maben----------	Severe: percs slowly, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
Providence---------	Severe: wetness, percs slowly.	Severe: slope.	Severe: wetness.	Moderate: wetness, slope.	Fair: too clayey, slope, wetness.
Mt, Mv---------- Mantachie	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
Oa---------- Oaklimeter	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Fair: too clayey, wetness.

See footnote at end of table.

TABLE 12.--SANITARY FACILITIES--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
OrB2, OrC2 Ora	Severe: wetness, percs slowly.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Fair: wetness.
OrD2, OrD3 Ora	Severe: wetness, percs slowly.	Severe: slope, wetness.	Moderate: wetness, slope.	Moderate: wetness, slope.	Fair: slope, wetness.
Oz Ozan	Severe: flooding, wetness, percs slowly.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
Pf*: Pits.					
Udorthents.					
PoB2, PoC2 Providence	Severe: wetness, percs slowly.	Moderate: slope.	Severe: wetness.	Moderate: wetness.	Fair: too clayey, wetness.
Ro, Rs Rosebloom	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
RuB, RuC Ruston	Slight	Moderate: seepage, slope.	Moderate: too clayey.	Slight	Fair: too clayey.
SaB2, SaC2 Savannah	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Moderate: wetness.	Fair: too clayey, wetness.
SmE Smithdale	Moderate: slope.	Severe: seepage, slope.	Severe: seepage.	Severe: seepage.	Fair: too clayey, slope.
SmF Smithdale	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: seepage, slope.	Poor: slope.
SN*: Smithdale	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: seepage, slope.	Poor: slope.
Maben	Severe: percs slowly, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
SR*: Smithdale	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: seepage, slope.	Poor: slope.
Ruston	Slight	Moderate: seepage, slope.	Moderate: too clayey.	Slight	Fair: too clayey.
SS*: Smithdale	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: seepage, slope.	Poor: slope.

See footnote at end of table.

TABLE 12.--SANITARY FACILITIES--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
SS*: Sweatman	Severe: percs slowly, slope.	Severe: slope.	Severe: slope, too clayey.	Severe: slope.	Poor: too clayey, hard to pack, slope.
St Stough	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
SwC Sweatman	Severe: percs slowly.	Moderate: slope.	Severe: too clayey.	Slight	Poor: too clayey, hard to pack.
SwE Sweatman	Severe: percs slowly.	Severe: slope.	Severe: too clayey.	Moderate: slope.	Poor: too clayey, hard to pack.
SwF Sweatman	Severe: percs slowly, slope.	Severe: slope.	Severe: slope, too clayey.	Severe: slope.	Poor: too clayey, hard to pack, slope.
SX*: Sweatman	Severe: percs slowly, slope.	Severe: slope.	Severe: slope, too clayey.	Severe: slope.	Poor: too clayey, hard to pack, slope.
Providence	Severe: wetness, percs slowly.	Severe: slope.	Severe: wetness.	Moderate: wetness, slope.	Fair: too clayey, slope, wetness.
TaB2, TaC2 Tippah	Severe: wetness, percs slowly.	Severe: wetness.	Severe: too clayey.	Moderate: wetness.	Poor: too clayey, hard to pack.
Ur Urbo	Severe: flooding, wetness, percs slowly.	Severe: flooding, wetness.	Severe: flooding, wetness, too clayey.	Severe: flooding, wetness.	Poor: too clayey, hard to pack, wetness.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 13.--CONSTRUCTION MATERIALS

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "good," "fair," "poor," "probable," and "improbable." Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition; it does not eliminate the need for onsite investigation]

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
Ae---------- Ariel	Fair: wetness, low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
Ak, Ar---------- Arkabutla	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
Bu---------- Bude	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
Ca---------- Cascilla	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
Ce, Cf---------- Chenneby	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Good.
CH*: Chenneby----------	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Good.
Arkabutla----------	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
Gu---------- Guyton	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
Kk, Kr---------- Kirkville	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Good.
MaB, MaC, MaE---------- Maben	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.
MP*: Maben----------	Fair: low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer, slope.
Providence----------	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: slope.
Mt, Mv---------- Mantachie	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
Oa---------- Oaklimeter	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Good.
OrB2, OrC2---------- Ora	Fair: low strength, thin layer, wetness.	Improbable: excess fines.	Improbable: excess fines.	Good.
OrD2, OrD3---------- Ora	Fair: low strength, thin layer, wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: slope.
Oz---------- Ozan	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Good.
Pf*: Pits.				

See footnote at end of table.

TABLE 13.--CONSTRUCTION MATERIALS--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
Pf*: Udorthents.				
PoB2, PoC2---------- Providence	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Good.
Ro, Rs---------- Rosebloom	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
RuB, RuC---------- Ruston	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
SaB2, SaC2---------- Savannah	Fair: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Good.
SmE---------- Smithdale	Good----------	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones, slope.
SmF---------- Smithdale	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
SN*: Smithdale----------	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
Maben----------	Fair: low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer, slope.
SR*: Smithdale----------	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
Ruston----------	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
SS*: Smithdale----------	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
Sweatman----------	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer, slope.
St---------- Stough	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Good.
SwC, SwE---------- Sweatman	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.
SwF---------- Sweatman	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer, slope.
SX*: Sweatman----------	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer, slope.
Providence----------	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: slope.
TaB2, TaC2---------- Tippah	Poor: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Fair: thin layer.

See footnote at end of table.

TABLE 13.--CONSTRUCTION MATERIALS--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
Ur---------- Urbo	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 14.--WATER MANAGEMENT

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not evaluated. The information in this table indicates the dominant soil condition; it does not eliminate the need for onsite investigation]

Map symbol and soil name	Limitations for--			Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Terraces and diversions	Grassed waterways
Ae---------- Ariel	Moderate: seepage.	Severe: piping.	Severe: slow refill.	Flooding-------	Erodes easily, wetness.	Erodes easily.
Ak, Ar---------- Arkabutla	Moderate: seepage.	Severe: wetness.	Moderate: slow refill.	Flooding-------	Erodes easily, wetness.	Erodes easily.
Bu---------- Bude	Slight---------	Severe: wetness.	Severe: no water.	Percs slowly---	Erodes easily, wetness, rooting depth.	Wetness, erodes easily, rooting depth.
Ca---------- Cascilla	Moderate: seepage.	Severe: piping.	Severe: no water.	Deep to water	Erodes easily	Erodes easily.
Ce, Cf---------- Chenneby	Moderate: seepage.	Severe: piping, hard to pack, wetness.	Moderate: slow refill.	Flooding-------	Erodes easily, wetness.	Wetness, erodes easily.
CH*: Chenneby---------	Moderate: seepage.	Severe: piping, hard to pack, wetness.	Moderate: slow refill.	Flooding-------	Erodes easily, wetness.	Wetness, erodes easily.
Arkabutla--------	Moderate: seepage.	Severe: wetness.	Moderate: slow refill.	Flooding-------	Erodes easily, wetness.	Erodes easily.
Gu---------- Guyton	Moderate: seepage.	Severe: piping, wetness.	Severe: no water.	Percs slowly, flooding.	Erodes easily, wetness, percs slowly.	Wetness, erodes easily, percs slowly.
Kk, Kr---------- Kirkville	Moderate: seepage.	Severe: piping, wetness.	Moderate: slow refill.	Flooding-------	Wetness--------	Favorable.
MaB, MaC---------- Maben	Slight---------	Severe: piping.	Severe: no water.	Deep to water	Erodes easily	Erodes easily.
MaE---------- Maben	Slight---------	Severe: piping.	Severe: no water.	Deep to water	Slope, erodes easily.	Slope, erodes easily.
MP*: Maben----------	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, erodes easily.	Slope, erodes easily.
Providence-------	Moderate: seepage.	Moderate: thin layer, piping, wetness.	Severe: no water.	Slope----------	Slope, erodes easily, wetness.	Slope, erodes easily, rooting depth.
Mt, Mv---------- Mantachie	Moderate: seepage.	Severe: piping, wetness.	Moderate: slow refill.	Flooding-------	Wetness--------	Wetness.
Oa---------- Oaklimeter	Moderate: seepage.	Severe: piping, wetness.	Moderate: slow refill.	Flooding-------	Erodes easily, wetness.	Erodes easily.
OrB2, OrC2-------- Ora	Moderate: seepage.	Moderate: piping, wetness.	Severe: no water.	Slope----------	Erodes easily, wetness.	Erodes easily, droughty.

See footnote at end of table.

TABLE 14.--WATER MANAGEMENT--Continued

Map symbol and soil name	Limitations for--			Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Terraces and diversions	Grassed waterways
OrD2, OrD3 Ora	Moderate: seepage.	Moderate: piping, wetness.	Severe: no water.	Slope	Slope, erodes easily, wetness.	Slope, erodes easily, droughty.
Oz Ozan	Slight	Severe: piping.	Severe: no water.	Percs slowly, flooding.	Erodes easily, wetness, percs slowly.	Wetness, percs slowly.
Pf*: Pits.						
Udorthents.						
PoB2, PoC2 Providence	Moderate: seepage.	Moderate: thin layer, piping, wetness.	Severe: no water.	Slope	Erodes easily, wetness.	Erodes easily, rooting depth.
Ro, Rs Rosebloom	Slight	Severe: wetness.	Severe: slow refill.	Percs slowly, flooding.	Erodes easily, wetness, percs slowly.	Wetness, erodes easily, percs slowly.
RuB, RuC Ruston	Moderate: seepage, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Favorable	Favorable.
SaB2, SaC2 Savannah	Moderate: seepage.	Severe: piping.	Severe: no water.	Slope	Wetness, rooting depth.	Rooting depth.
SmE Smithdale	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water	Slope	Slope.
SmF Smithdale	Severe: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope	Slope.
SN*: Smithdale	Severe: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope	Slope.
Maben	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, erodes easily.	Slope, erodes easily.
SR*: Smithdale	Severe: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope	Slope.
Ruston	Moderate: seepage, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Favorable	Favorable.
SS*: Smithdale	Severe: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope	Slope.
Sweatman	Severe: slope.	Severe: hard to pack.	Severe: no water.	Deep to water	Slope, erodes easily.	Slope, erodes easily.
St Stough	Slight	Moderate: piping, wetness.	Severe: no water.	Favorable	Erodes easily, wetness.	Wetness, erodes easily, droughty.
SwC Sweatman	Slight	Severe: hard to pack.	Severe: no water.	Deep to water	Erodes easily	Erodes easily.

See footnote at end of table.

TABLE 14.--WATER MANAGEMENT--Continued

Map symbol and soil name	Limitations for--			Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Terraces and diversions	Grassed waterways
SwE---------- Sweatman	Slight---------	Severe: hard to pack.	Severe: no water.	Deep to water	Slope, erodes easily.	Slope, erodes easily.
SwF---------- Sweatman	Severe: slope.	Severe: hard to pack.	Severe: no water.	Deep to water	Slope, erodes easily.	Slope, erodes easily.
SX*: Sweatman---------	Severe: slope.	Severe: hard to pack.	Severe: no water.	Deep to water	Slope, erodes easily.	Slope, erodes easily.
Providence-------	Moderate: seepage.	Moderate: thin layer, piping, wetness.	Severe: no water.	Slope----------	Slope, erodes easily, wetness.	Slope, erodes easily, rooting depth.
TaB2, TaC2-------- Tippah	Slight---------	Moderate: hard to pack, wetness.	Severe: no water.	Percs slowly, slope.	Erodes easily, wetness.	Erodes easily, percs slowly.
Ur---------- Urbo	Slight---------	Severe: wetness.	Severe: slow refill.	Percs slowly, flooding.	Erodes easily, wetness, percs slowly.	Wetness, erodes easily, percs slowly.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 15.--ENGINEERING INDEX PROPERTIES

[The symbol < means less than; > means more than. Absence of an entry indicates that data were not estimated. Some soils may have Unified classifications and USDA textures in addition to those shown. In general, the dominant classifications and textures are shown]

Map symbol and soil name	Depth	USDA texture	Classification		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	4	10	40	200		
	In								Pct	
Ae---------- Ariel	0-47 47-63	Silt loam-------- Silt loam, loam	ML, CL-ML ML, CL, CL-ML	A-4 A-4	100 100	100 100	90-100 85-100	85-95 70-90	<30 <30	NP-7 NP-10
Ak, Ar---------- Arkabutla	0-7 7-66	Silt loam-------- Silty clay loam, loam, silt loam.	CL, CL-ML CL	A-4, A-6 A-6, A-7	100 100	100 100	85-100 85-100	60-95 70-90	25-35 30-45	7-15 12-25
Bu---------- Bude	0-20 20-30 30-60	Silt loam-------- Silt loam, silty clay loam. Silt loam, clay loam, silty clay loam.	CL CL CL, CH	A-6 A-6, A-7 A-7, A-6	100 100 100	100 100 100	95-100 95-100 95-100	85-96 84-98 75-90	25-40 35-50 35-65	11-25 15-30 15-40
Ca---------- Cascilla	0-8 8-65	Silt loam-------- Silt loam, silty clay loam.	ML, CL-ML, CL CL, CL-ML	A-4, A-6 A-4, A-6	100 100	100 100	95-100 95-100	75-95 75-100	20-38 20-39	3-15 5-15
Ce, Cf---------- Chenneby	0-9 9-40 40-60	Silt loam-------- Loam, silt loam, silty clay loam. Stratified sandy loam to silty clay loam.	CL, ML CL, ML, MH, CH SM, ML, SC, CL	A-4, A-6 A-4, A-6, A-7 A-2-4, A-4	100 100 100	95-100 95-100 100	90-100 90-100 65-90	60-90 75-95 20-75	20-35 30-55 <30	3-15 8-20 NP-8
CH*: Chenneby-------- Arkabutla-------	0-9 9-40 40-60 0-7 7-66	Silt loam-------- Loam, silt loam, silty clay loam. Stratified sandy loam to silty clay loam. Silt loam-------- Silty clay loam, loam, silt loam.	CL, ML CL, ML, MH, CH SM, ML, SC, CL CL, CL-ML CL	A-4, A-6 A-4, A-6, A-7 A-2-4, A-4 A-4, A-6 A-6, A-7	100 100 100 100 100	95-100 95-100 100 100 100	90-100 90-100 65-90 85-100 85-100	60-90 75-95 20-75 60-95 70-90	20-35 30-55 <30 25-35 30-45	3-15 8-20 NP-8 7-15 12-25
Gu---------- Guyton	0-17 17-47 47-77	Silt loam-------- Silt loam, silty clay loam, clay loam. Silt loam, silty clay loam, sandy clay loam.	ML, CL-ML CL, CL-ML CL, CL-ML, ML	A-4 A-6, A-4 A-6, A-4	100 100 100	100 100 100	95-100 94-100 95-100	65-90 75-95 50-95	<27 22-40 <40	NP-7 6-18 NP-18
Kk, Kr---------- Kirkville	0-13 13-65	Fine sandy loam Loam, sandy loam, fine sandy loam.	ML, SM, CL-ML, SM-SC ML, SM, CL-ML, SM-SC	A-2, A-4 A-2, A-4	100 100	100 100	60-85 60-100	30-65 30-65	<20 <20	NP-5 NP-5

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	4	10	40	200		
	In								Pct	
MaB, MaC--------- Maben	0-5	Silt loam---------	CL-ML, CL	A-4, A-6	95-100	90-100	80-95	50-70	20-40	5-20
	5-22	Clay, clay loam, silty clay.	MH	A-7	90-100	90-100	90-100	75-95	50-80	18-40
	22-35	Stratified loam to weathered bedrock.	CL, ML, CH, MH	A-6, A-7	95-100	80-95	70-90	60-75	30-60	11-25
	35-67	Stratified fine sandy loam to weathered bedrock.	SC, SM-SC, CL, CL-ML	A-4, A-6	95-100	80-95	70-85	40-55	20-36	5-20
MaE----------	0-5	Fine sandy loam	SM, SM-SC	A-4	95-100	90-100	70-85	36-50	<30	NP-7
Maben	5-22	Clay, clay loam, silty clay.	MH	A-7	90-100	90-100	90-100	75-95	50-80	18-40
	22-35	Stratified loam to weathered bedrock.	CL, ML, CH, MH	A-6, A-7	95-100	80-95	70-90	60-75	30-60	11-25
	35-67	Stratified fine sandy loam to weathered bedrock.	SC, SM-SC, CL, CL-ML	A-4, A-6	95-100	80-95	70-85	40-55	20-36	5-20
MP*:										
Maben----------	0-5	Fine sandy loam	SM, SM-SC	A-4	95-100	90-100	70-85	36-50	<30	NP-7
	5-22	Clay, clay loam, silty clay.	MH	A-7	90-100	90-100	90-100	75-95	50-80	18-40
	22-35	Stratified loam to weathered bedrock.	CL, ML, CH, MH	A-6, A-7	95-100	80-95	70-90	60-75	30-60	11-25
	35-67	Stratified fine sandy loam to weathered bedrock.	SC, SM-SC, CL, CL-ML	A-4, A-6	95-100	80-95	70-85	40-55	20-36	5-20
Providence------	0-5	Silt loam---------	ML, CL, CL-ML	A-4	100	100	100	85-100	<30	NP-10
	5-19	Silty clay loam, silt loam.	CL	A-7, A-6	100	100	95-100	85-100	30-45	11-20
	19-30	Silt loam, silty clay loam.	CL	A-6	100	100	90-100	70-90	25-40	11-20
	30-60	Loam, clay loam, sandy clay loam.	CL, SC	A-6, A-4	100	95-100	70-95	40-80	20-35	8-18
Mt, Mv---------- Mantachie	0-7	Loam----------	CL-ML, SM-SC, SM, ML	A-4	95-100	90-100	60-85	40-60	<20	NP-5
	7-60	Loam, clay loam, sandy clay loam.	CL, SC, SM-SC, CL-ML	A-4, A-6	95-100	90-100	80-95	45-80	20-40	5-15
Oa---------- Oaklimeter	0-7	Silt loam---------	ML, CL, CL-ML	A-4	100	100	90-100	70-90	<30	NP-8
	7-16	Very fine sandy loam, silt loam, loam.	ML, CL, CL-ML	A-4	100	100	85-95	60-85	<30	NP-8
	16-60	Silt loam, silty clay loam.	ML, CL, CL-ML	A-4	100	100	90-100	90-100	<30	NP-10

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	4	10	40	200		
	In								Pct	
OrB2, OrC2, OrD2, OrD3----------	0-5	Loam----------	ML, CL-ML	A-4	100	95-100	80-100	60-90	<30	NP-5
Ora	5-22	Clay loam, sandy clay loam, loam.	CL	A-6, A-4, A-7	100	95-100	80-100	50-80	25-48	8-22
	22-50	Sandy clay loam, loam, sandy loam.	CL	A-6, A-7, A-4	100	95-100	80-100	50-75	25-43	8-25
	50-60	Sandy clay loam, loam, sandy loam.	CL	A-6, A-7	100	95-100	80-98	50-60	30-49	11-30
Oz----------	0-16	Loam----------	SM, ML	A-4	95-100	95-100	90-100	40-75	<20	NP-3
Ozan	16-33	Loam, sandy loam	ML, CL-ML, CL	A-4	95-100	95-100	90-100	51-80	<30	NP-10
	33-70	Loam, sandy clay loam, sandy loam.	CL, CL-ML, ML	A-4, A-6	95-100	95-100	90-100	51-85	<35	NP-18
Pf*:										
Pits.										
Udorthents.										
PoB2, PoC2-------	0-5	Silt loam--------	ML, CL, CL-ML	A-4	100	100	100	85-100	<30	NP-10
Providence	5-19	Silty clay loam, silt loam.	CL	A-7, A-6	100	100	95-100	85-100	30-45	11-20
	19-30	Silt loam, silty clay loam.	CL	A-6	100	100	90-100	70-90	25-40	11-20
	30-60	Loam, clay loam, sandy clay loam.	CL, SC	A-6, A-4	100	95-100	70-95	40-80	20-35	8-18
Ro, Rs----------	0-9	Silt loam--------	CL	A-4, A-6	100	100	90-100	80-95	28-40	9-20
Rosebloom	9-60	Silty clay loam	CL	A-6, A-7	100	100	95-100	90-100	30-45	15-25
RuB, RuC---------	0-6	Fine sandy loam	SM, ML	A-4, A-2-4	85-100	78-100	65-100	30-75	<20	NP-3
Ruston	6-28	Sandy clay loam, loam, clay loam.	SC, CL	A-6	85-100	78-100	70-100	36-75	30-40	11-20
	28-37	Fine sandy loam, sandy loam, loamy sand.	SM, ML, CL-ML, SM-SC	A-4, A-2-4	85-100	78-100	65-100	30-75	<27	NP-7
	37-80	Sandy clay loam, loam, clay loam.	SC, CL	A-6	85-100	78-100	70-100	36-75	30-42	11-20
SaB2, SaC2-------	0-10	Fine sandy loam	SM, ML	A-2-4, A-4	100	100	60-85	30-55	<25	NP-4
Savannah	10-22	Sandy clay loam, clay loam, loam.	CL, SC, CL-ML	A-4, A-6	100	100	80-100	40-80	23-40	7-19
	22-60	Loam, clay loam, sandy clay loam.	CL, SC, CL-ML	A-4, A-6, A-7	100	100	80-100	40-80	23-43	7-19
SmE, SmF---------	0-7	Fine sandy loam	SM, SM-SC	A-4	100	85-100	60-80	36-49	<20	NP-5
Smithdale	7-47	Clay loam, sandy clay loam, loam.	SM-SC, SC, CL, CL-ML	A-6, A-4	100	85-100	80-95	45-75	23-38	7-15
	47-80	Loam, sandy loam	SM, ML, CL, SC	A-4	100	85-100	65-80	36-70	<30	NP-10
SN*:										
Smithdale-------	0-7	Fine sandy loam	SM, SM-SC	A-4	100	85-100	60-80	36-49	<20	NP-5
	7-47	Clay loam, sandy clay loam, loam.	SM-SC, SC, CL, CL-ML	A-6, A-4	100	85-100	80-95	45-75	23-38	7-15
	47-80	Loam, sandy loam	SM, ML, CL, SC	A-4	100	85-100	65-80	36-70	<30	NP-10

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	4	10	40	200		
	In								Pct	
SN*:										
Maben	0-5	Fine sandy loam	SM, SM-SC	A-4	95-100	90-100	70-85	36-50	<30	NP-7
	5-22	Clay, clay loam, silty clay.	MH	A-7	90-100	90-100	90-100	75-95	50-80	18-40
	22-35	Stratified loam to weathered bedrock.	CL, ML, CH, MH	A-6, A-7	95-100	80-95	70-90	60-75	30-60	11-25
	35-67	Stratified fine sandy loam to weathered bedrock.	SC, SM-SC, CL, CL-ML	A-4, A-6	95-100	80-95	70-85	40-55	20-36	5-20
SR*:										
Smithdale	0-7	Fine sandy loam	SM, SM-SC	A-4	100	85-100	60-80	36-49	<20	NP-5
	7-47	Clay loam, sandy clay loam, loam.	SM-SC, SC, CL, CL-ML	A-6, A-4	100	85-100	80-95	45-75	23-38	7-15
	47-80	Loam, sandy loam	SM, ML, CL, SC	A-4	100	85-100	65-80	36-70	<30	NP-10
Ruston	0-6	Fine sandy loam	SM, ML	A-4, A-2-4	85-100	78-100	65-100	30-75	<20	NP-3
	6-28	Sandy clay loam, loam, clay loam.	SC, CL	A-6	85-100	78-100	70-100	36-75	30-40	11-20
	28-37	Fine sandy loam, sandy loam, loamy sand.	SM, ML, CL-ML, SM-SC	A-4, A-2-4	85-100	78-100	65-100	30-75	<27	NP-7
	37-80	Sandy clay loam, loam, clay loam.	SC, CL	A-6	85-100	78-100	70-100	36-75	30-42	11-20
SS*:										
Smithdale	0-7	Fine sandy loam	SM, SM-SC	A-4	100	85-100	60-80	36-49	<20	NP-5
	7-47	Clay loam, sandy clay loam, loam.	SM-SC, SC, CL, CL-ML	A-6, A-4	100	85-100	80-95	45-75	23-38	7-15
	47-80	Loam, sandy loam	SM, ML, CL, SC	A-4	100	85-100	65-80	36-70	<30	NP-10
Sweatman	0-6	Fine sandy loam	CL-ML, CL, ML	A-4	100	100	90-100	55-90	<35	NP-10
	6-29	Clay, silty clay, silty clay loam.	MH	A-7	95-100	95-100	95-100	90-95	60-80	25-40
	29-37	Clay, silty clay, loam.	MH, CL	A-6, A-7	95-100	80-100	80-100	70-85	30-70	12-30
	37-62	Stratified weathered bedrock to fine sandy loam.	ML, MH	A-7	95-100	75-100	60-95	55-95	41-65	12-30
St Stough	0-17	Fine sandy loam	SM-SC, SM, ML, CL-ML	A-4	100	100	65-85	35-65	<25	NP-7
	17-34	Loam, fine sandy loam.	ML, CL, CL-ML	A-4	100	100	75-95	50-75	<25	NP-8
	34-62	Sandy loam, sandy clay loam, loam.	SC, CL	A-4, A-6	100	100	65-90	40-65	25-40	8-15
SwC Sweatman	0-6	Silt loam	CL-ML, CL, ML	A-4	100	100	90-100	55-90	<35	NP-10
	6-29	Clay, silty clay, silty clay loam.	MH	A-7	95-100	95-100	95-100	90-95	60-80	25-40
	29-37	Clay, silty clay, loam.	MH, CL	A-6, A-7	95-100	80-100	80-100	70-85	30-70	12-30
	37-62	Stratified weathered bedrock to fine sandy loam.	ML, MH	A-7	95-100	75-100	60-95	55-95	41-65	12-30

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	4	10	40	200		
	In								Pct	
SwE, SwF---------- Sweatman	0-6	Fine sandy loam	CL-ML, CL, ML	A-4	100	100	90-100	55-90	<35	NP-10
	6-29	Clay, silty clay, silty clay loam.	MH	A-7	95-100	95-100	95-100	90-95	60-80	25-40
	29-37	Clay, silty clay, loam.	MH, CL	A-6, A-7	95-100	80-100	80-100	70-85	30-70	12-30
	37-62	Stratified weathered bedrock to fine sandy loam.	ML, MH	A-7	95-100	75-100	60-95	55-95	41-65	12-30
SX*:										
Sweatman---------	0-6	Fine sandy loam	CL-ML, CL, ML	A-4	100	100	90-100	55-90	<35	NP-10
	6-29	Clay, silty clay, silty clay loam.	MH	A-7	95-100	95-100	95-100	90-95	60-80	25-40
	29-37	Clay, silty clay, loam.	MH, CL	A-6, A-7	95-100	80-100	80-100	70-85	30-70	12-30
	37-62	Stratified weathered bedrock to fine sandy loam.	ML, MH	A-7	95-100	75-100	60-95	55-95	41-65	12-30
Providence-------	0-5	Silt loam---------	ML, CL, CL-ML	A-4	100	100	100	85-100	<30	NP-10
	5-19	Silty clay loam, silt loam.	CL	A-7, A-6	100	100	95-100	85-100	30-45	11-20
	19-30	Silt loam, silty clay loam.	CL	A-6	100	100	90-100	70-90	25-40	11-20
	30-60	Loam, clay loam, sandy clay loam.	CL, SC	A-6, A-4	100	95-100	70-95	40-80	20-35	8-18
TaB2, TaC2------- Tippah	0-5	Silt loam---------	CL, CL-ML	A-4	100	100	90-100	70-90	20-30	4-10
	5-28	Silty clay loam, silt loam.	CL	A-6, A-7	100	98-100	90-100	85-95	30-45	11-22
	28-60	Silty clay loam, silty clay, clay.	CH	A-7	100	99-100	80-100	60-95	50-65	25-40
Ur---------- Urbo	0-8	Silt loam---------	CL	A-6	100	100	95-100	95-100	30-40	15-25
	8-60	Silty clay, clay loam, silty clay loam.	CL, CH	A-7	100	100	95-100	80-98	44-62	20-36

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS

[The symbol < means less than; > means more than. Entries under "Erosion factors--T" apply to the entire profile. Entries under "Organic matter" apply only to the surface layer. Absence of an entry indicates that data were not available or were not estimated]

Map symbol and soil name	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Organic matter
								K	T	
	In	Pct	G/cm³	In/hr	In/in	pH				Pct
Ae----------	0-47	12-18	1.40-1.50	0.6-2.0	0.20-0.22	4.5-5.5	Low----------	0.43	5	.5-2
Ariel	47-63	7-27	1.40-1.50	0.2-0.6	0.16-0.20	4.5-5.5	Low----------	0.43		
Ak, Ar----------	0-7	5-25	1.40-1.50	0.6-2.0	0.20-0.22	4.5-5.5	Low----------	0.43	5	1-3
Arkabutla	7-66	20-35	1.45-1.55	0.6-2.0	0.18-0.21	4.5-5.5	Low----------	0.32		
Bu----------	0-20	10-30	1.40-1.55	0.6-2.0	0.18-0.23	4.5-6.0	Low----------	0.49	3	.5-2
Bude	20-30	10-32	1.35-1.55	0.06-0.2	0.10-0.12	4.5-6.0	Moderate-----	0.43		
	30-60	16-32	1.45-1.60	0.06-0.2	0.10-0.12	4.5-6.0	Moderate-----	0.37		
Ca----------	0-8	5-20	1.40-1.50	0.6-2.0	0.18-0.22	4.5-5.5	Low----------	0.43	5	1-3
Cascilla	8-65	18-30	1.45-1.50	0.6-2.0	0.16-0.20	4.5-5.5	Low----------	0.43		
Ce, Cf----------	0-9	12-27	1.30-1.60	0.6-2.0	0.14-0.20	4.5-6.0	Low----------	0.37	5	.5-2
Chenneby	9-40	12-35	1.30-1.50	0.6-2.0	0.15-0.20	4.5-6.0	Low----------	0.32		
	40-60	8-30	1.30-1.50	2.0-6.0	0.05-0.10	4.5-6.0	Low----------	0.24		
CH*:										
Chenneby--------	0-9	12-27	1.30-1.60	0.6-2.0	0.14-0.20	4.5-6.0	Low----------	0.37	5	.5-2
	9-40	12-35	1.30-1.50	0.6-2.0	0.15-0.20	4.5-6.0	Low----------	0.32		
	40-60	8-30	1.30-1.50	2.0-6.0	0.05-0.10	4.5-6.0	Low----------	0.24		
Arkabutla-------	0-7	5-25	1.40-1.50	0.6-2.0	0.20-0.22	4.5-5.5	Low----------	0.43	5	1-3
	7-66	20-35	1.45-1.55	0.6-2.0	0.18-0.21	4.5-5.5	Low----------	0.32		
Gu----------	0-17	7-25	1.35-1.65	0.6-2.0	0.20-0.23	3.6-6.0	Low----------	0.43	5	<2
Guyton	17-47	20-35	1.35-1.70	0.06-0.2	0.15-0.22	3.6-6.0	Low----------	0.37		
	47-77	20-35	1.35-1.70	0.06-2.0	0.15-0.22	3.6-8.4	Low----------	0.37		
Kk, Kr----------	0-13	10-20	1.30-1.50	0.6-2.0	0.15-0.15	4.5-5.5	Low----------	0.28	5	.5-2
Kirkville	13-65	10-18	1.35-1.55	0.6-2.0	0.10-0.15	4.5-5.5	Low----------	0.28		
MaB, MaC---------	0-5	15-25	1.40-1.50	0.6-2.0	0.15-0.20	5.6-6.5	Low----------	0.37	3	.5-1
Maben	5-22	35-55	1.45-1.55	0.2-0.6	0.14-0.18	4.5-6.0	High---------	0.28		
	22-35	---	---	0.2-0.6	0.14-0.18	4.5-6.0	Moderate-----	0.28		
	35-67	---	---	0.2-0.6	0.10-0.15	4.5-6.0	Low----------	----		
MaE----------	0-5	5-20	1.40-1.50	0.6-2.0	0.12-0.16	5.6-6.5	Low----------	0.28	3	.5-1
Maben	5-22	35-55	1.45-1.55	0.2-0.6	0.14-0.18	4.5-6.0	High---------	0.28		
	22-35	---	---	0.2-0.6	0.14-0.18	4.5-6.0	Moderate-----	0.28		
	35-67	---	---	0.2-0.6	0.10-0.15	4.5-6.0	Low----------	----		
MP*:										
Maben----------	0-5	5-20	1.40-1.50	0.6-2.0	0.12-0.16	5.6-6.5	Low----------	0.28	3	.5-1
	5-22	35-55	1.45-1.55	0.2-0.6	0.14-0.18	4.5-6.0	High---------	0.28		
	22-35	---	---	0.2-0.6	0.14-0.18	4.5-6.0	Moderate-----	0.28		
	35-67	---	---	0.2-0.6	0.10-0.15	4.5-6.0	Low----------	----		
Providence------	0-5	5-12	1.30-1.40	0.6-2.0	0.20-0.22	4.5-6.0	Low----------	0.49	3	.5-3
	5-19	18-30	1.40-1.50	0.6-2.0	0.20-0.22	4.5-6.0	Low----------	0.43		
	19-30	20-30	1.40-1.60	0.2-0.6	0.08-0.10	4.5-6.0	Moderate-----	0.32		
	30-60	12-25	1.40-1.60	0.2-0.6	0.08-0.10	4.5-6.0	Low----------	0.32		
Mt, Mv----------	0-7	8-20	1.50-1.60	0.6-2.0	0.16-0.20	4.5-5.5	Low----------	0.28	5	1-3
Mantachie	7-60	18-34	1.50-1.60	0.6-2.0	0.14-0.20	4.5-5.5	Low----------	0.28		
Oa----------	0-7	10-16	1.40-1.50	0.6-2.0	0.20-0.22	4.5-5.5	Low----------	0.43	5	.5-2
Oaklimeter	7-16	7-18	1.40-1.50	0.6-2.0	0.15-0.20	4.5-5.5	Low----------	0.43		
	16-60	7-30	1.40-1.50	0.6-2.0	0.20-0.20	4.5-5.5	Low----------	0.43		

See footnote at end of table.

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Organic matter
								K	T	
	In	Pct	G/cm3	In/hr	In/in	pH				Pct
OrB2, OrC2, OrD2, OrD3----------	0-5	10-25	1.45-1.55	2.0-6.0	0.18-0.20	3.6-5.5	Low----------	0.37	3	1-3
Ora	5-22	18-33	1.45-1.60	0.6-2.0	0.12-0.18	3.6-5.5	Low----------	0.37		
	22-50	18-33	1.70-1.80	0.2-0.6	0.05-0.10	3.6-5.5	Low----------	0.32		
	50-60	10-35	1.65-1.75	0.6-2.0	0.10-0.15	3.6-5.5	Low----------	0.37		
Oz----------	0-16	5-18	1.30-1.50	0.6-2.0	0.14-0.17	4.5-6.0	Low----------	0.32	5	.5-3
Ozan	16-33	7-18	1.30-1.50	0.06-0.2	0.15-0.18	4.5-6.0	Low----------	0.43		
	33-70	7-30	1.30-1.60	0.06-0.2	0.15-0.18	4.5-6.0	Low----------	0.43		
Pf*:										
Pits.										
Udorthents.										
PoB2, PoC2-------	0-5	5-12	1.30-1.40	0.6-2.0	0.20-0.22	4.5-6.0	Low----------	0.49	3	.5-3
Providence	5-19	18-30	1.40-1.50	0.6-2.0	0.20-0.22	4.5-6.0	Low----------	0.43		
	19-30	20-30	1.40-1.60	0.2-0.6	0.08-0.10	4.5-6.0	Moderate-----	0.32		
	30-60	12-25	1.40-1.60	0.2-0.6	0.08-0.10	4.5-6.0	Low----------	0.32		
Ro, Rs----------	0-9	18-25	1.40-1.55	0.6-2.0	0.20-0.22	4.5-5.5	Low----------	0.43	5	1-3
Rosebloom	9-60	28-35	1.40-1.50	0.6-2.0	0.18-0.22	4.5-5.5	Moderate-----	0.37		
RuB, RuC---------	0-6	5-20	1.30-1.70	0.6-2.0	0.09-0.16	4.5-6.5	Low----------	0.28	5	.5-2
Ruston	6-28	18-35	1.40-1.80	0.6-2.0	0.12-0.17	4.5-6.0	Low----------	0.28		
	28-37	10-20	1.30-1.70	0.6-2.0	0.12-0.15	4.5-6.0	Low----------	0.32		
	37-80	15-38	1.40-1.70	0.6-2.0	0.12-0.17	4.5-6.0	Low----------	0.28		
SaB2, SaC2-------	0-10	3-16	1.45-1.65	0.6-2.0	0.10-0.15	4.5-5.5	Low----------	0.24	3	.5-3
Savannah	10-22	18-32	1.55-1.75	0.6-2.0	0.13-0.20	4.5-5.5	Low----------	0.28		
	22-60	18-32	1.60-1.80	0.2-0.6	0.05-0.10	4.5-5.5	Low----------	0.24		
SmE, SmF---------	0-7	2-15	1.40-1.50	2.0-6.0	0.14-0.16	4.5-5.5	Low----------	0.28	5	.5-2
Smithdale	7-47	18-33	1.40-1.55	0.6-2.0	0.15-0.17	4.5-5.5	Low----------	0.24		
	47-80	12-27	1.40-1.55	2.0-6.0	0.14-0.16	4.5-5.5	Low----------	0.28		
SN*:										
Smithdale-------	0-7	2-15	1.40-1.50	2.0-6.0	0.14-0.16	4.5-5.5	Low----------	0.28	5	.5-2
	7-47	18-33	1.40-1.55	0.6-2.0	0.15-0.17	4.5-5.5	Low----------	0.24		
	47-80	12-27	1.40-1.55	2.0-6.0	0.14-0.16	4.5-5.5	Low----------	0.28		
Maben----------	0-5	5-20	1.40-1.50	0.6-2.0	0.12-0.16	5.6-6.5	Low----------	0.28	3	.5-1
	5-22	35-55	1.45-1.55	0.2-0.6	0.14-0.18	4.5-6.0	High---------	0.28		
	22-35	---	---	0.2-0.6	0.14-0.18	4.5-6.0	Moderate-----	0.28		
	35-67	---	---	0.2-0.6	0.10-0.15	4.5-6.0	Low----------	----		
SR*:										
Smithdale-------	0-7	2-15	1.40-1.50	2.0-6.0	0.14-0.16	4.5-5.5	Low----------	0.28	5	.5-2
	7-47	18-33	1.40-1.55	0.6-2.0	0.15-0.17	4.5-5.5	Low----------	0.24		
	47-80	12-27	1.40-1.55	2.0-6.0	0.14-0.16	4.5-5.5	Low----------	0.28		
Ruston----------	0-6	5-20	1.30-1.70	0.6-2.0	0.09-0.16	4.5-6.5	Low----------	0.28	5	.5-2
	6-28	18-35	1.40-1.80	0.6-2.0	0.12-0.17	4.5-6.0	Low----------	0.28		
	28-37	10-20	1.30-1.70	0.6-2.0	0.12-0.15	4.5-6.0	Low----------	0.32		
	37-80	15-38	1.40-1.70	0.6-2.0	0.12-0.17	4.5-6.0	Low----------	0.28		
SS*:										
Smithdale-------	0-7	2-15	1.40-1.50	2.0-6.0	0.14-0.16	4.5-5.5	Low----------	0.28	5	.5-2
	7-47	18-33	1.40-1.55	0.6-2.0	0.15-0.17	4.5-5.5	Low----------	0.24		
	47-80	12-27	1.40-1.55	2.0-6.0	0.14-0.16	4.5-5.5	Low----------	0.28		
Sweatman--------	0-6	5-20	1.40-1.60	0.6-2.0	0.20-0.22	4.5-5.5	Low----------	0.37	3	.5-2
	6-29	35-55	1.40-1.50	0.2-0.6	0.16-0.20	4.5-5.5	Moderate-----	0.28		
	29-37	35-55	1.40-1.55	0.2-0.6	0.16-0.20	4.5-5.5	Moderate-----	0.28		
	37-62	---	---	0.2-0.6	0.10-0.18	4.5-5.5	Moderate-----	----		

See footnote at end of table.

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Organic matter
								K	T	
	In	Pct	G/cm^3	In/hr	In/in	pH				Pct
St----------	0-17	5-15	1.40-1.55	0.6-2.0	0.12-0.18	4.5-5.5	Low----------	0.37	3	---
Stough	17-34	8-18	1.45-1.60	0.2-0.6	0.07-0.11	4.5-5.5	Low----------	0.37		
	34-62	5-27	1.55-1.65	0.2-0.6	0.07-0.11	4.5-5.5	Low----------	0.37		
SwC, SwE, SwF----	0-6	5-20	1.40-1.60	0.6-2.0	0.20-0.22	4.5-5.5	Low----------	0.37	3	.5-2
Sweatman	6-29	35-55	1.40-1.50	0.2-0.6	0.16-0.20	4.5-5.5	Moderate-----	0.28		
	29-37	35-55	1.40-1.55	0.2-0.6	0.16-0.20	4.5-5.5	Moderate-----	0.28		
	37-62	---	---	0.2-0.6	0.10-0.18	4.5-5.5	Moderate-----	----		
SX*:										
Sweatman--------	0-6	5-20	1.40-1.60	0.6-2.0	0.20-0.22	4.5-5.5	Low----------	0.37	3	.5-2
	6-29	35-55	1.40-1.50	0.2-0.6	0.16-0.20	4.5-5.5	Moderate-----	0.28		
	29-37	35-55	1.40-1.55	0.2-0.6	0.16-0.20	4.5-5.5	Moderate-----	0.28		
	37-62	---	---	0.2-0.6	0.10-0.18	4.5-5.5	Moderate-----	----		
Providence------	0-5	5-12	1.30-1.40	0.6-2.0	0.20-0.22	4.5-6.0	Low----------	0.49	3	.5-3
	5-19	18-30	1.40-1.50	0.6-2.0	0.20-0.22	4.5-6.0	Low----------	0.43		
	19-30	20-30	1.40-1.60	0.2-0.6	0.08-0.10	4.5-6.0	Moderate-----	0.32		
	30-60	12-25	1.40-1.60	0.2-0.6	0.08-0.10	4.5-6.0	Low----------	0.32		
TaB2, TaC2-------	0-5	5-20	1.35-1.45	0.6-2.0	0.20-0.22	4.5-6.0	Low----------	0.43	5	.5-2
Tippah	5-28	20-35	1.40-1.50	0.6-2.0	0.19-0.21	4.5-6.0	Moderate-----	0.43		
	28-60	30-55	1.40-1.55	0.06-0.2	0.16-0.18	4.5-6.0	High---------	0.24		
Ur----------	0-8	12-35	1.40-1.50	0.06-0.2	0.19-0.21	4.5-5.5	Low----------	0.49	5	1-3
Urbo	8-60	35-55	1.45-1.55	<0.06	0.18-0.20	4.5-5.5	Moderate-----	0.28		

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 17.--SOIL AND WATER FEATURES

["Flooding" and "water table" and terms such as "rare," "brief," "apparent," and "perched" are explained in the text. The symbol < means less than; > means more than. Absence of an entry indicates that the feature is not a concern]

Map symbol and soil name	Hydrologic group	Flooding			High water table			Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Uncoated steel	Concrete
					Ft				
Ae---------- Ariel	C	Occasional	Brief-----	Jan-Apr	2.5-4.0	Apparent	Jan-Apr	Low------	Moderate.
Ak---------- Arkabutla	C	Occasional	Brief to very long.	Jan-Apr	1.0-1.5	Apparent	Jan-Apr	High-----	High.
Ar---------- Arkabutla	C	Frequent----	Brief to very long.	Jan-Apr	1.0-1.5	Apparent	Jan-Apr	High-----	High.
Bu---------- Bude	C	None--------	---	---	0.5-1.5	Perched	Jan-Apr	High-----	High.
Ca---------- Cascilla	B	Occasional	Brief to very long.	Jan-Apr	>6.0	---	---	Low------	Moderate.
Ce---------- Chenneby	C	Occasional	Very brief	Dec-Apr	1.0-2.5	Apparent	Jan-Mar	High-----	Moderate.
Cf---------- Chenneby	C	Frequent----	Very brief	Dec-Apr	1.0-2.5	Apparent	Jan-Mar	High-----	Moderate.
CH*:									
Chenneby----------	C	Frequent----	Very brief	Dec-Apr	1.0-2.5	Apparent	Jan-Mar	High-----	Moderate.
Arkabutla---------	C	Frequent----	Brief to very long.	Jan-Apr	1.0-1.5	Apparent	Jan-Apr	High-----	High.
Gu---------- Guyton	D	Occasional	Very brief to long.	Jan-Dec	0-1.5	Perched	Dec-May	High-----	Moderate.
Kk---------- Kirkville	C	Occasional	Brief-----	Jan-Apr	1.5-2.5	Apparent	Jan-Apr	Moderate	High.
Kr---------- Kirkville	C	Frequent----	Brief-----	Jan-Apr	1.5-2.5	Apparent	Jan-Apr	Moderate	High.
MaB, MaC, MaE----- Maben	C	None--------	---	---	>6.0	---	---	High-----	Moderate.
MP*:									
Maben----------	C	None--------	---	---	>6.0	---	---	High-----	Moderate.
Providence-------	C	None--------	---	---	1.5-3.0	Perched	Jan-Mar	Moderate	Moderate.
Mt---------- Mantachie	C	Occasional	Brief-----	Jan-Mar	1.0-1.5	Apparent	Dec-Mar	High-----	High.
Mv---------- Mantachie	C	Frequent----	Brief-----	Jan-Mar	1.0-1.5	Apparent	Dec-Mar	High-----	High.
Oa---------- Oaklimeter	C	Occasional	Brief to very long.	Nov-Apr	1.5-2.5	Apparent	Nov-Mar	Moderate	High.
OrB2, OrC2, OrD2, OrD3---------- Ora	C	None--------	---	---	2.0-3.5	Perched	Feb-Apr	Moderate	High.

See footnote at end of table.

TABLE 17.--SOIL AND WATER FEATURES--Continued

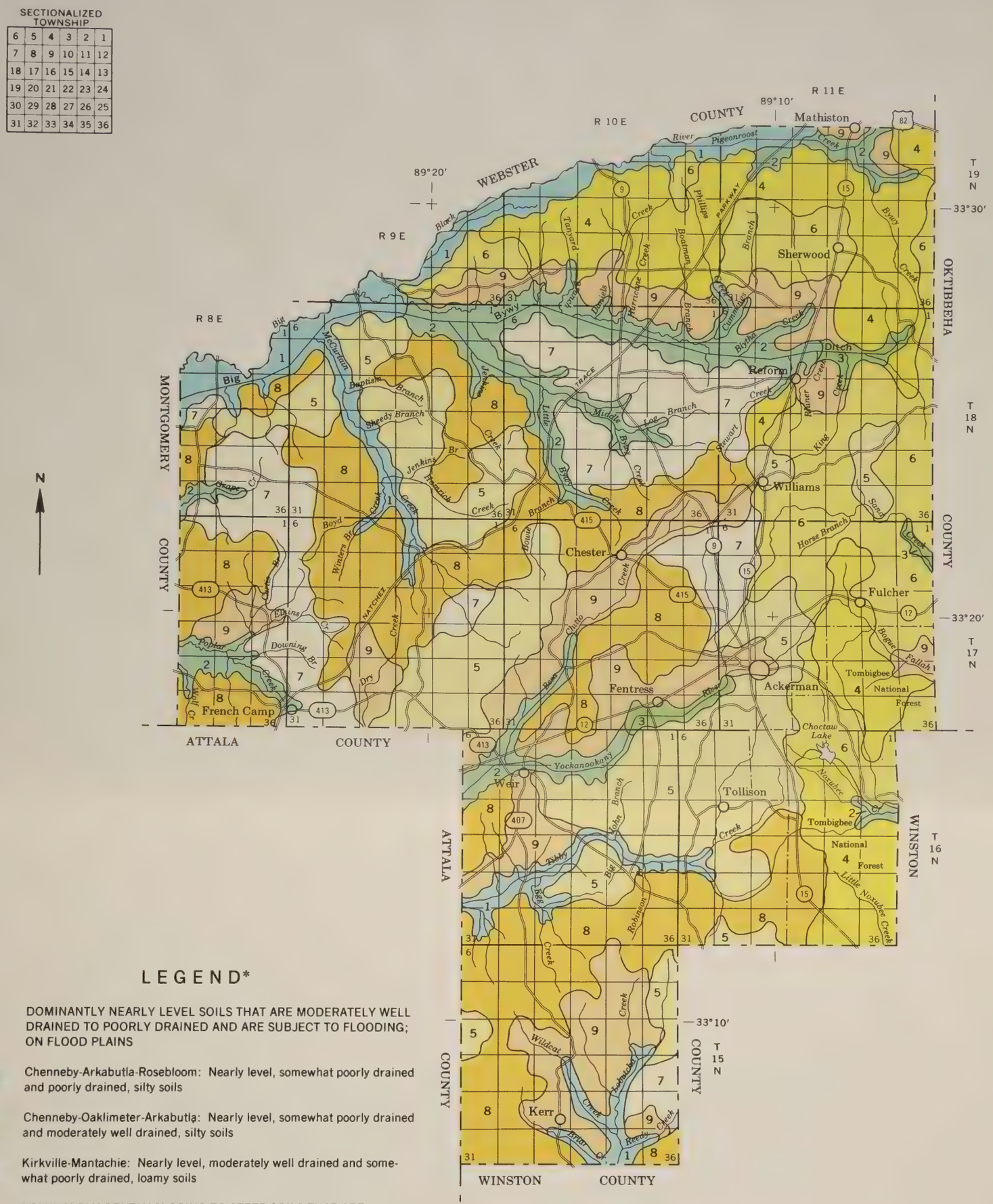
Map symbol and soil name	Hydrologic group	Flooding			High water table			Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Uncoated steel	Concrete
					Ft				
Oz---------- Ozan	D	Occasional	Very brief to brief.	Dec-May	1.0-2.5	Perched	Dec-May	High-----	Moderate.
Pf*: Pits.									
Udorthents.									
PoB2, PoC2-------- Providence	C	None--------	---	---	1.5-3.0	Perched	Jan-Mar	Moderate	Moderate.
Ro---------- Rosebloom	D	Occasional	Brief to long.	Jan-Mar	0-1.0	Apparent	Jan-Mar	High-----	Moderate.
Rs---------- Rosebloom	D	Frequent----	Brief to long.	Jan-Mar	0-1.0	Apparent	Jan-Mar	High-----	Moderate.
RuB, RuC---------- Ruston	B	None--------	---	---	>6.0	---	---	Moderate	Moderate.
SaB2, SaC2-------- Savannah	C	None--------	---	---	1.5-3.0	Perched	Jan-Mar	Moderate	High.
SmE, SmF---------- Smithdale	B	None--------	---	---	>6.0	---	---	Low------	Moderate.
SN*: Smithdale--------	B	None--------	---	---	>6.0	---	---	Low------	Moderate.
Maben----------	C	None--------	---	---	>6.0	---	---	High-----	Moderate.
SR*: Smithdale--------	B	None--------	---	---	>6.0	---	---	Low------	Moderate.
Ruston----------	B	None--------	---	---	>6.0	---	---	Moderate	Moderate.
SS*: Smithdale--------	B	None--------	---	---	>6.0	---	---	Low------	Moderate.
Sweatman---------	C	None--------	---	---	>6.0	---	---	High-----	High.
St---------- Stough	C	None--------	---	---	1.0-1.5	Perched	Jan-Apr	Moderate	High.
SwC, SwE, SwF----- Sweatman	C	None--------	---	---	>6.0	---	---	High-----	High.
SX*: Sweatman---------	C	None--------	---	---	>6.0	---	---	High-----	High.
Providence-------	C	None--------	---	---	1.5-3.0	Perched	Jan-Mar	Moderate	Moderate.
TaB2, TaC2-------- Tippah	C	None--------	---	---	2.0-2.5	Perched	Dec-Apr	High-----	High.
Ur---------- Urbo	D	Occasional	Brief to long.	Jan-Mar	1.0-2.0	Apparent	Jan-Mar	High-----	High.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 18.--CLASSIFICATION OF THE SOILS

Soil name	Family or higher taxonomic class
Ariel	Coarse-silty, mixed, thermic Fluventic Dystrochrepts
Arkabutla	Fine-silty, mixed, acid, thermic Aeric Fluvaquents
Bude	Fine-silty, mixed, thermic Glossaquic Fragiudalfs
Cascilla	Fine-silty, mixed, thermic Fluventic Dystrochrepts
Chenneby	Fine-silty, mixed, thermic Fluvaquentic Dystrochrepts
Guyton	Fine-silty, siliceous, thermic Typic Glossaqualfs
Kirkville	Coarse-loamy, siliceous, thermic Fluvaquentic Dystrochrepts
Maben	Fine, mixed, thermic Ultic Hapludalfs
Mantachie	Fine-loamy, siliceous, acid, thermic Aeric Fluvaquents
Oaklimeter	Coarse-silty, mixed, thermic Fluvaquentic Dystrochrepts
Ora	Fine-loamy, siliceous, thermic Typic Fragiudults
Ozan	Coarse-loamy, siliceous, thermic Typic Glossaqualfs
Providence	Fine-silty, mixed, thermic Typic Fragiudalfs
Rosebloom	Fine-silty, mixed, acid, thermic Typic Fluvaquents
Ruston	Fine-loamy, siliceous, thermic Typic Paleudults
Savannah	Fine-loamy, siliceous, thermic Typic Fragiudults
Smithdale	Fine-loamy, siliceous, thermic Typic Paleudults
Stough	Coarse-loamy, siliceous, thermic Fragiaquic Paleudults
Sweatman	Clayey, mixed, thermic Typic Hapludults
Tippah	Fine-silty, mixed, thermic Aquic Paleudalfs
Urbo	Fine, mixed, acid, thermic Aeric Haplaquepts

* U.S. GOVERNMENT PRINTING OFFICE : 1986 O - 477-015 (QL 3)



LEGEND*

DOMINANTLY NEARLY LEVEL SOILS THAT ARE MODERATELY WELL DRAINED TO POORLY DRAINED AND ARE SUBJECT TO FLOODING; ON FLOOD PLAINS

1 — Chenneby-Arkabutla-Rosebloom: Nearly level, somewhat poorly drained and poorly drained, silty soils

2 — Chenneby-Oaklimeter-Arkabutla: Nearly level, somewhat poorly drained and moderately well drained, silty soils

3 — Kirkville-Mantachie: Nearly level, moderately well drained and somewhat poorly drained, loamy soils

DOMINANTLY GENTLY SLOPING TO STEEP SOILS THAT ARE MODERATELY WELL DRAINED OR WELL DRAINED; ON UPLANDS

4 — Maben-Tippah-Providence: Gently sloping to steep, well drained, loamy soils and gently sloping to moderately steep, moderately well drained, silty soils

5 — Smithdale-Ruston-Ora: Gently sloping to steep, well drained and moderately well drained, loamy soils

6 — Maben-Smithdale-Ora: Gently sloping to steep, well drained and moderately well drained, loamy soils

7 — Sweatman-Providence-Tippah: Gently sloping to steep, well drained, loamy soils and gently sloping to moderately steep, moderately well drained, silty soils

8 — Smithdale-Sweatman-Ora: Gently sloping to steep, well drained and moderately well drained, loamy and silty soils

9 — Ora-Providence-Tippah: Gently sloping to moderately steep, moderately well drained, loamy and silty soils.

*Texture terms refer to the surface layer of the major soils.

Compiled 1984

Each area outlined on this map consists of more than one kind of soil. The map is thus meant for general planning rather than a basis for decisions on the use of specific tracts.

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE AND FOREST SERVICE
MISSISSIPPI AGRICULTURAL AND FOREST EXPERIMENT STATION

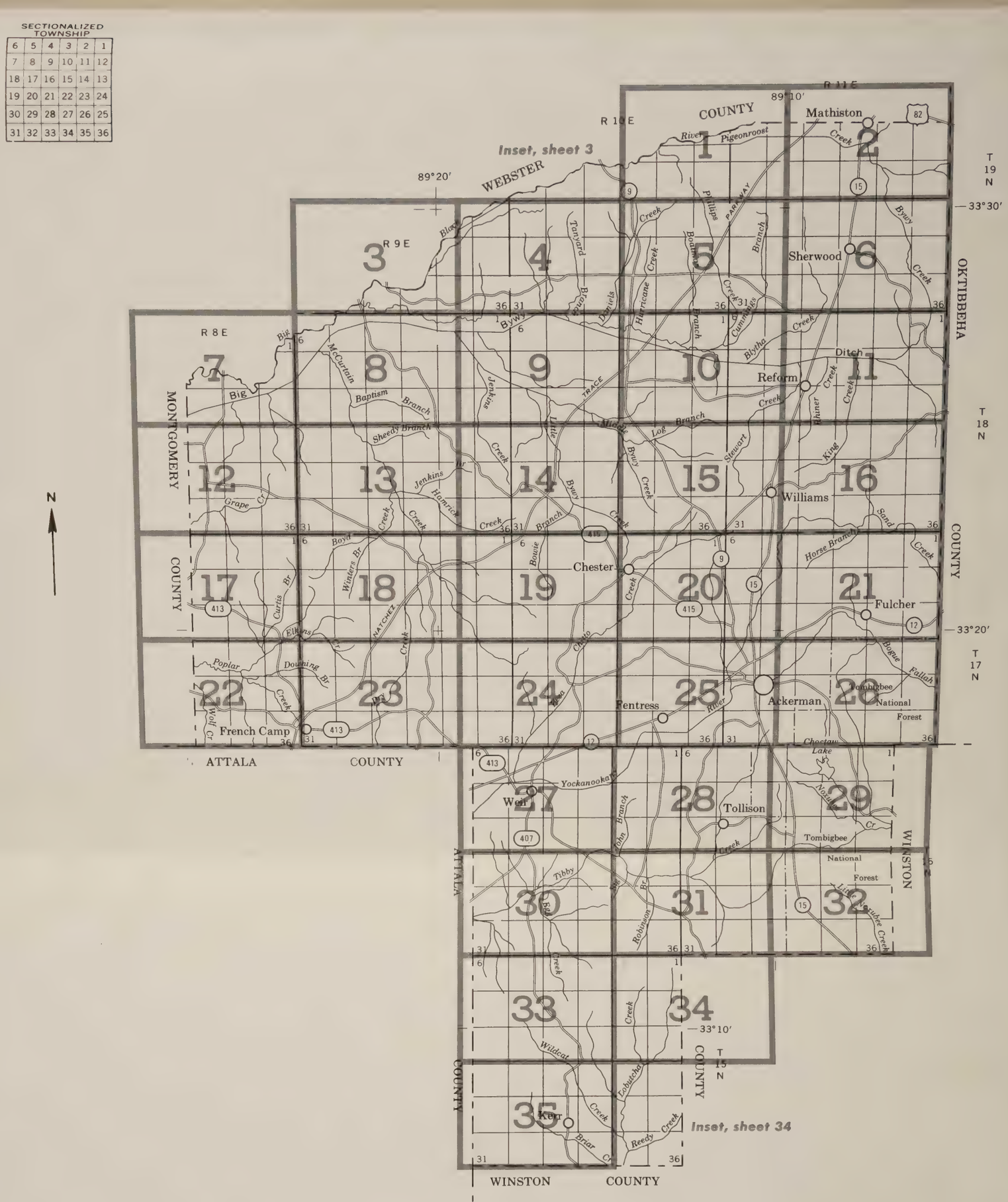
GENERAL SOIL MAP

CHOCTAW COUNTY
MISSISSIPPI

Scale 1:190,080

1 0 1 2 3 Miles

1 0 3 6 Km



INDEX TO MAP SHEETS

CHOCTAW COUNTY
MISSISSIPPI

Scale 1:190,080

1 0 1 2 3 Miles

1 0 3 6 Km

SOIL LEGEND

The first letter, always a capital, is the initial letter of the soil name. The second letter is a capital if the mapping unit is broadly defined 1/; otherwise, it is a small letter. The third letter, if used, is always a capital and shows the slope. Symbols without slope letters are those of nearly level soils or miscellaneous areas, or broadly defined mapping units. A final number of 2 in the symbol shows that the soil is eroded, and a final number of 3 shows that it is severely eroded. Symbols without erosion numbers 2 or 3 are those of soils that are slightly eroded or broadly defined units. 1/

1/ The composition of these units is more variable than that of others in the survey area but has been controlled well enough to be interpreted for the expected use of the soils.

SYMBOL	NAME
Ae	Ariel silt loam, occasionally flooded
Ak	Arkabutla silt loam, occasionally flooded
Ar	Arkabutla silt loam, frequently flooded
Bu	Bude silt loam, 0 to 2 percent slopes
Ca	Cascilla silt loam, occasionally flooded
Ce	Chenneby silt loam, occasionally flooded
Cf	Chenneby silt loam, frequently flooded
CH	Chenneby-Arkabutla association, frequently flooded 1/
Gu	Guyton silt loam, occasionally flooded
Kk	Kirkville fine sandy loam, occasionally flooded
Kr	Kirkville fine sandy loam, frequently flooded
MaB	Maben silt loam, 2 to 5 percent slopes
MaC	Maben silt loam, 5 to 8 percent slopes
MaE	Maben fine sandy loam, 8 to 15 percent slopes
MP	Maben-Providence association, hilly 1/
Mt	Mantachie loam, occasionally flooded
Mv	Mantachie loam, frequently flooded
Oa	Oaklimeter silt loam, occasionally flooded
OrB2	Ora loam, 2 to 5 percent slopes, eroded
OrC2	Ora loam, 5 to 8 percent slopes, eroded
OrD2	Ora loam, 8 to 12 percent slopes, eroded
OrD3	Ora loam, 8 to 12 percent slopes, severely eroded
Oz	Ozan loam, occasionally flooded
Pf	Pits - Udorthents complex
PoB2	Providence silt loam, 2 to 5 percent slopes, eroded
PoC2	Providence silt loam, 5 to 8 percent slopes, eroded
Ro	Rosebloom silt loam, occasionally flooded
Rs	Rosebloom silt loam, frequently flooded
RuB	Ruston fine sandy loam, 2 to 5 percent slopes
RuC	Ruston fine sandy loam, 5 to 8 percent slopes
SaB2	Savannah fine sandy loam, 2 to 5 percent slopes, eroded
SaC2	Savannah fine sandy loam, 5 to 8 percent slopes, eroded
SmE	Smithdale fine sandy loam, 8 to 15 percent slopes
SmF	Smithdale fine sandy loam, 15 to 35 percent slopes
SN	Smithdale-Maben association, hilly 1/
SR	Smithdale-Ruston association, hilly 1/
SS	Smithdale-Sweatman association, hilly 1/
St	Stough fine sandy loam, 0 to 2 percent slopes
SwC	Sweatman silt loam, 5 to 8 percent slopes
SwE	Sweatman fine sandy loam, 8 to 15 percent slopes
SwF	Sweatman fine sandy loam, 15 to 25 percent slopes
SX	Sweatman-Providence association, hilly 1/
TaB2	Tippah silt loam, 2 to 5 percent slopes, eroded
TaC2	Tippah silt loam, 5 to 8 percent slopes, eroded
Ur	Urbo silt loam, occasionally flooded

CONVENTIONAL AND SPECIAL SYMBOLS LEGEND

CULTURAL FEATURES

BOUNDARIES

- National, state or province
- County or parish
- Minor civil division
- Reservation (national forest or park, state forest or park, and large airport)
- Land grant
- Limit of soil survey (label)
- Field sheet matchline & neatline
- AD HOC BOUNDARY (label) — Hedley Airstrip
- Small airport, airfield, park, oilfield, cemetery, or flood pool — FLOOD POOL LINE
- STATE COORDINATE TICK
- LAND DIVISION CORNERS (sections and land grants)

ROADS

- Divided (median shown if scale permits)
- Other roads
- Trail

ROAD EMBLEM & DESIGNATIONS

- Interstate — 21
- Federal — 173
- State — 28
- County, farm or ranch — 1283

- RAILROAD
- POWER TRANSMISSION LINE (normally not shown)
- PIPE LINE (normally not shown)
- FENCE (normally not shown)

LEVEES

- Without road
- With road
- With railroad

DAMS

- Large (to scale)
- Medium or small — water — w

PITS

- Gravel pit
- Mine or quarry

MISCELLANEOUS CULTURAL FEATURES

- Farmstead, house (omit in urban areas)
- Church
- School
- Indian mound (label) — Indian Mound
- Located object (label) — Tower
- Tank (label) — Gas
- Wells, oil or gas
- Windmill
- Kitchen midden

WATER FEATURES

DRAINAGE

- Perennial, double line
- Perennial, single line
- Intermittent
- Drainage end
- Canals or ditches
  - Double-line (label) — CANAL
  - Drainage and/or irrigation

LAKES, PONDS AND RESERVOIRS

- Perennial — water — w
- Intermittent — int — i

MISCELLANEOUS WATER FEATURES

- Marsh or swamp
- Spring
- Well, artesian
- Well, irrigation
- Wet spot

SPECIAL SYMBOLS FOR SOIL SURVEY

- SOIL DELINEATIONS AND SYMBOLS — Ar — Ce
- ESCARPMENTS
  - Bedrock (points down slope)
  - Other than bedrock (points down slope)
- SHORT STEEP SLOPE
- GULLY
- DEPRESSION OR SINK
- SOIL SAMPLE SITE (normally not shown) — S
- MISCELLANEOUS
  - Blowout
  - Clay spot
  - Gravelly spot
  - Gumbo, slick or scabby spot (sodic)
  - Dumps and other similar non soil areas
  - Prominent hill or peak
  - Rock outcrop (includes sandstone and shale)
  - Saline spot
  - Sandy spot
  - Severely eroded spot
  - Slide or slip (tips point upslope)
  - Stony spot, very stony spot — 0

CHOCTAW COUNTY, MISSISSIPPI — SHEET NUMBER 1

375 000 FEET

1 410 000 FEET

R 10 E | R 11 E

T. 19 N.

(Joins inset, sheet 3)

(Joins sheet 2)

WEBSTER COUNTY

INDEFINITE BOUNDARY

BIG BLACK RIVER

CANAL

Pettigrew Creek

PARKWAY

TRACE

11 12 13 14 15 7 8 17 18

SN CH Ce Cf Ar Rs Oa MP Ur Bu Gu Kk Pf MaE MaC TaC2 TaB2 PoC2 OrD2 OrD3

1 395 000 FEET (Joins sheet 5)

N

1 Mile 5000 Feet

Scale 1:20000


R 11 E.
T. 19 N.
WEBSTER COUNTY
OKTIBBEHA COUNTY
Mathiston
Pigeon Roost Creek
Big Black River Canal
Natchez Trace Parkway
Illinois Central Gulf
(Joins sheet 1)
400 000 FEET (Joins sheet 6)
Scale 1:20000
1 Mile
5000 Feet
N
82

CHOCTAW COUNTY, MISSISSIPPI — SHEET NUMBER 3

3

N

330 000 FEET

360 000 FEET

R. 9 E.

R. 10 E.

T. 19 N.

T. 19 N.

1 395 000 FEET

1 402 000 FEET

1 391 000 FEET

1 386 000 FEET

350 000 FEET

WEBSTER COUNTY

BIG BLACK RIVER CANAL

BIG BLACK RIVER

SHORT CANAL

Byway Creek

17

18

16

26

27

34

35

33

32

CH

MP

Mt

Ar

Cf

Ce

Oa

Bu

Gu

Ur

OrD2

OrD3

OrC2

MaE

TaC2

TaB2

SmE

SmF

Kk

St

SaB2

RuC

SN

Ak

Ca

Ro

PoB2

PoC2

w

(Joins sheet 1)

(Joins sheet 4)

(Joins sheet 8)

1 Mile

5000 Feet

Scale 1:20000

0 0

1/4 1000

1/2 2000

3/4 3000

1 4000

5000

Base maps are prepared from 1:9 aerial photographs by various agencies. Coordinate grid ticks and land division corners

N

(Joins inset, sheet 3)

R. 9 E. R. 10 E.

370 000 FEET

T. 19 N.

WEBSTER COUNTY

BLACK RIVER

BIG BLACK RIVER

CANAL

Mossy Branch

Tanyard Branch

(Joins sheet 3)

(Joins sheet 5)

(Joins sheet 9)

355 000 FEET

1 Mile

5000 Feet

Scale 1:20000

0 0

¼ 1000

½ 2000

¾ 3000

1 4000

1¼ 5000

CHOCTAW COUNTY, MISSISSIPPI — SHEET NUMBER 6

CHOCTAW COUNTY, MISSISSIPPI — SHEET NUMBER 7

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 19 aerial photography. Coordinate grid ticks and land division corners, if


N
(Joins sheet 3)
R. 9 E.
350 000 FEET
1 380 000 FEET
(Joins sheet 7)
(Joins sheet 9)
(Joins sheet 13)
330 000 FEET
1 365 000 FEET
T. 18 N.
MONTGOMERY COUNTY
BIG BLACK RIVER
BIG BYWY DITCH
Bywy Creek
McCurtain
Baptism Creek
Kk Branch
Wood Springs
Scale 1:20 000
1 Mile
5000 Feet

N

Scale 1:20000

1 Mile 5000 Feet

0 0 ¼ 1000 ½ 2000 ¾ 4000 1 5000

R. 10 E. R. 11 E.

T. 18 N.

395 000 FEET

1 365 000 FEET

375 000 FEET

(Joins sheet 9)

(Joins sheet 15)

(Joins sheet 11)

SaB2 (Joins sheet 5) SaB2

Hurricane Creek

Boatman Branch

Cummings Branch

Blytha Creek

Stewart Creek

Log Branch

TRACE

NATCHEZ TRACE PARKWAY

BIG BYWY

Bywy

DITCH

Mt

Oz St Ro Oa Ce Kk Ak Bu SX Mt SwC SwE SwF Ur Gu MP SmE OrB2 OrC2 OrD2 SaC2 SaB2 TaB2 TaC2 PoB2 PoC2 Ca

1 2 3 5 6 7 8 10 11 12 13 14 15 17 18

N

(Joins sheet 7)

1 Mile
5000 Feet

Scale 1:20000

1350 000 FEET

305 000 FEET (Joins sheet 17)

1 325 000 FEET

1 350 000 FEET

T. 18 N.

(Joins sheet 13)

COUNTY

MONTGOMERY

Williams Spring

Murphy Branch

Box Branch

Crape Creek

22 23 24 25 26 27 34 35 36

1 Mile
5000 Feet
Scale 1:20000

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating

N

R. 9 E. R. 10 E.

T. 18 N.

(Joins sheet 9)

(Joins sheet 13)

(Joins sheet 19)

(Joins sheet 15)

370 000 FEET

355 000 FEET

350 000 FEET

1 Mile

5000 Feet

Scale 1:20000

Jenkins

Jenkins Branch

Hamrick

Creek

Middle Bywy

Little Bywy

Little Creek

Bowie Branch

TRACE

NATCHEZ PARKWAY

JEFF

PARK

BUSBY

Little Mountain

19 20 21 23 24 25 26 28 29 30 31 32 33 35 36


N
(Joins sheet 11)
(Joins sheet 15)
R 11 E
1 420 000 FEET
1 350 000 FEET
400 000 FEET (Joins sheet 21)
T. 18 N.
PREVIOUSLY PUBLISHED
COUNTY BOUNDARY
OKTIBBEHA COUNTY
1 Mile
5000 Feet
Scale 1:20000
20
21
22
23
24
25
26
27
28
29
32
33
34
35
36
Rhiner Creek
Illinois Central Gulf
King Creek
Clarke Branch
Red Bank Creek
Sand Creek
Gas
Williams
MP
SN
SR
OrC2
OrD2
TaC2
TaB2
MaE
MaC
MaB
PoC2
Oa
Gu
Kk
RuC
SmE
SmF
Oz
Mt
Pf
SaC2

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 19__ aerial photographs. Coordinate grid ticks and land division corners, if

305 000 FEET

345 000 FEET

T. 17 N.

R. 8 E.

COUNTY

MONTGOMERY

(Joins sheet 12)

(Joins sheet 18)

(Joins sheet 22)

325 000 FEET

N

1 Mile

5000 Feet

Scale 1:20000

Branch

Curtis

Elkins

Creek

N

1 Mile 5000 Feet

Scale - 1:20000

(Joins sheet 13)

(Joins sheet 17)

(Joins sheet 23)

(Joins sheet 19)

350 000 FEET

335 000 FEET

330 000 FEET

T. 17 N.

Creek

Boyd

McCurtain

PARKWAY

TRACE

MATCHEZ

Elkins

Dry

Creek

Creek

SX SS SR CH

PoC2 PoB2 OrD2 OrC2 OrB2 OrD3 TaC2 TaB2 SwE SwC SmE SmF RuB RuC RuE OrC2 Oa Ce Kk Ro Oz Gu Ak St Ar Cf Kr Pf Rs Bu Ae SwF

1 2 3 4 5 6 7 8 9 10 11 14 15 16 17 18


N
1 Mile
5000 Feet
Scale 1:20000
(Joins sheet 15)
(Joins sheet 19)
(Joins sheet 25)
(Joins sheet 21)
R. 10 E.
R. 11 E.
T. 17 N.
395 000 FEET
375 000 FEET
345 000 FEET
335 000 FEET
Chester
Chitto Creek
Besa Creek
GULF CENTRAL
ILLINOIS GAS
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18
SwE SwF SS SX SN SR SmE SmF TaC2 TaB2 PoC2 PoB2 OrD2 OrC2 Oa Ae Bu Ro Pf Gu

CHOCTAW COUNTY, MISSISSIPPI — SHEET NUMBER 21

21

N

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 19 aerial photographs. Coordinate grid ticks and land division corners, if

400,000 FEET

345,000 FEET

R. 11 E.

T. 17 N.

(Joins sheet 16)

(Joins sheet 20)

(Joins sheet 26)

OKTIBBEHA COUNTY

ILLINOIS CENTRAL GULF

Fulcher

Bogue Faitah

Horse Branch

Sand Creek

Scale 1:20000

1 Mile

5000 Feet


N
1 Mile
5000 Feet
Scale 1:20000
(Joins sheet 17)
325 000 FEET
305 000 FEET
T. 17 N.
(Joins sheet 23)
MONTGOMERY COUNTY
ATTALA COUNTY
Poplar Creek
Elkins Branch
Downing Creek
Wolf Creek
TRACE PARKWAY
NATCHEZ
22
23
24
25
26
27
34
35
36
PoC2
OrD2
PoB2
Oa
SmF
Bu
SX
Ae
SwF
SwE
TaC2
Ak
Ce
Ca
Kk
Ro
SS
OrD3
TaB2
Gu
SwC
OrC2
413
407

CHOCTAW COUNTY, MISSISSIPPI — SHEET NUMBER 23

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 19 aerial photography. Coordinate grid ticks and land division corners, if any.


N
(Joins sheet 19)
R. 9 E.
R. 10 E.
370 000 FEET
330 000 FEET
T 17 N
(Joins sheet 23)
(Joins sheet 25)
320 000 FEET
355 000 FEET
ATTALA COUNTY (Joins sheet 27)
Scale 1:20000
1 Mile
5000 Feet
Creek
Chitto
Mike
Bessa
19
20
21
23
24
25
26
28
29
30
31
32
33
35
36
SX
SR
SS
Mt
SmE
SmF
RuC
RuB
Kk
OrD3
OrC2
OrD2
OrB2
PoB2
PoC2
Oa
Ae
Bu
Gu
Ro
Ce
SwF
SwE
TaC2
TaB2
St
Oz
Pf
Ak

CHOCTAW COUNTY, MISSISSIPPI — SHEET NUMBER 25

25

N

R. 10 E. | R. 11 E.

T. 17 N.

1 375 000 FEET

1 330 000 FEET

(Joins sheet 20)

(Joins sheet 24)

(Joins sheet 26)

1 320 000 FEET

395 000 FEET (Joins sheet 28)

ACKERMAN (county seat)

Fentress

Landing Strip

SEWAGE DISPOSAL POND

Yockanookany River

GULF

CENTRAL

ILLINOIS

GAS

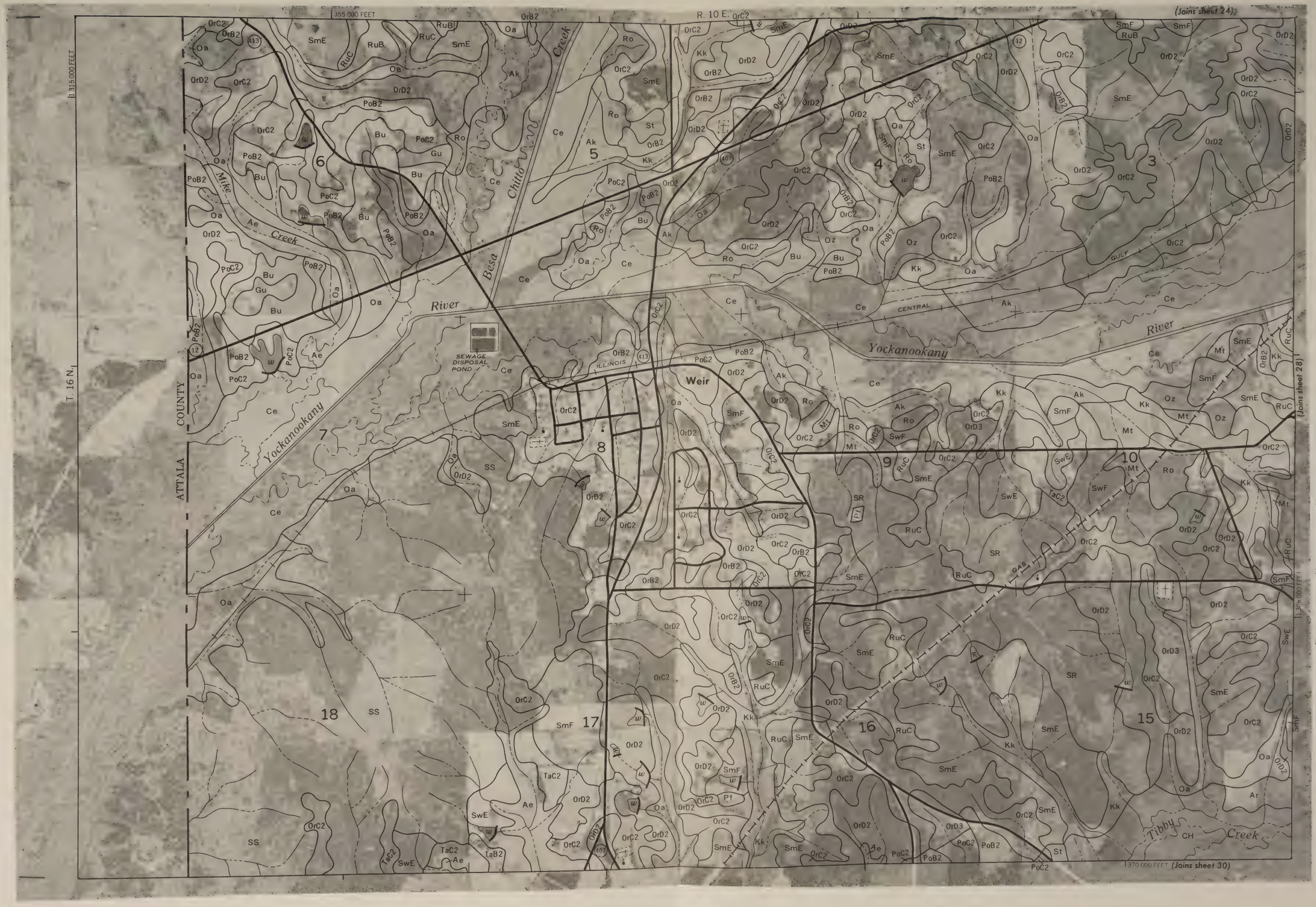
1 Mile

5000 Feet

Scale · 1:20000

This soil survey was made cooperatively by the Soil Conservation Service and Forest Service, U.S. Department of Agriculture, and other agencies. Base maps are prepared from 1965 aerial photography. Coordinate grid ticks and land division corners, if


N
(Joins sheet 21)
R. 11 E
420 000 FEET
(Joins sheet 25)
ACKERMAN
Tuscan
TOMBIGBEE
NATIONAL
FOREST
Bogue
Fallah
CENTRAL
GULF
ILLINOIS
T. 17 N.
OKTIBBEHA COUNTY
1400 000 FEET (Joins sheet 29)
1320 000 FEET
Scale 1:20000
1 Mile
5000 Feet
20
21
22
23
24
25
26
27
28
29
32
33
34
35
36
MaE
TaC2
OrD2
PoC2
OrC2
OrB2
PoB2
SaC2
SaB2
RuB
RuC
SR
SN
MP
Oa
Ak
Ca
Ce
Bu
Gu
Mt



This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 19 aerial photography. Coordinate grid ticks and land division corners, if


R. 10 E.
R. 11 E.
T. 16 N.
(Joins sheet 25)
(Joins sheet 27)
(Joins sheet 29)
(Joins sheet 31)
395 000 FEET
375 000 FEET
1 315 000 FEET
1 305 000 FEET
Yockanookany River
Tibby Creek
John Big Branch
Tollison
TOMBIGBEE NATIONAL FOREST
FOREST BOUNDARY
GULF, MOBILE & OHIO R.R.
ILLINOIS CENTRAL R.R.
Scale 1:20000
1 Mile
5000 Feet


(Joins sheet 27)
R. 10 E
370 000 FEET
1 300 000 FEET
T. 16 N.
(Joins sheet 31)
(Joins sheet 33)
350 000 FEET
ATTALA COUNTY
Tibby
Creek
Egg
Rawhide
Branch
Scale 1 : 20000
1 Mile
5000 Feet
19
20
21
22
27
28
29
30
31
32
33
34

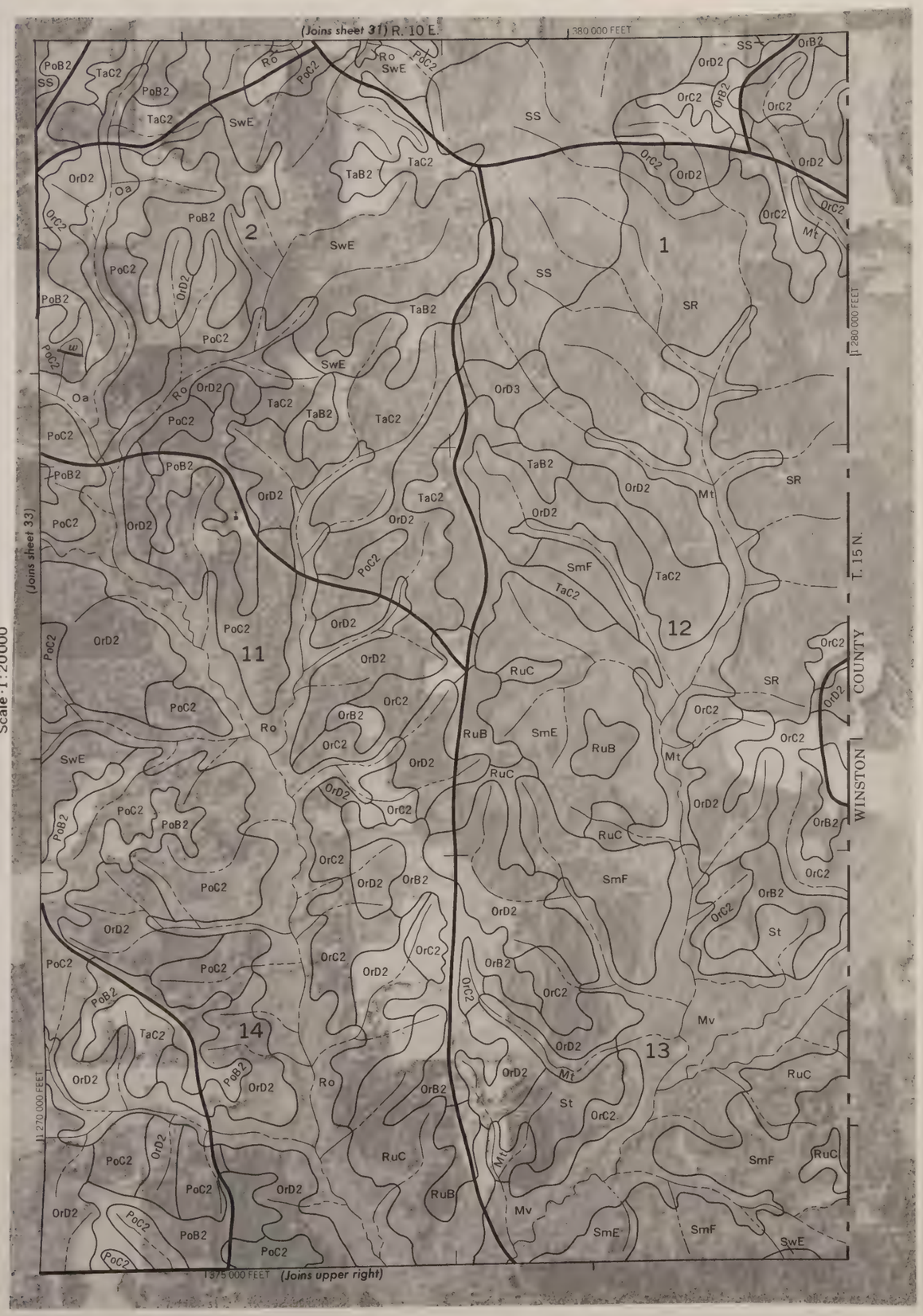
CHOCTAW COUNTY, MISSISSIPPI — SHEET NUMBER 31

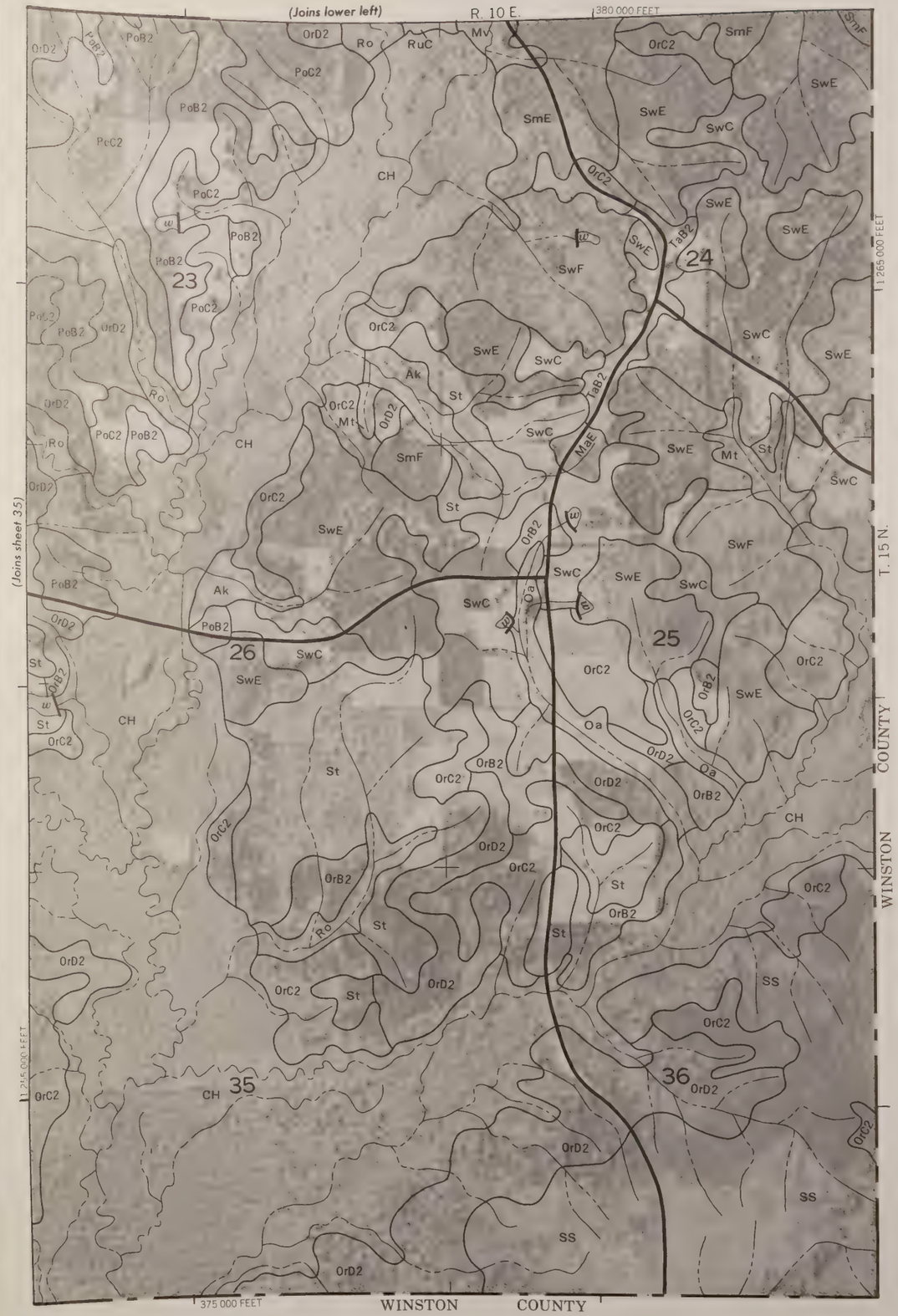
This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 19 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned


N
(Joins sheet 29)
(Joins sheet 31)
420 000 FEET
1 295 000 FEET
1 285 000 FEET
1 400 000 FEET
1 Mile
5000 Feet
Scale - 1:20000
0
1000
2000
3000
4000
5000
¼
½
¾
1
21
22
23
24
25
26
27
28
33
34
35
36
TOMBIGBEE
NATIONAL
FOREST
Little
Noxubee
River
WINSTON COUNTY
WINSTON COUNTY
T. 16 N.
SS
OrC2
OrD2
MP
Ce
Ro
Ak
SmE
SmF
Oa
Ar
MaC
MaB
MaE
OrB2
TaC2
PoC2
TaB2
Ca

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1949 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from [illegible] aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.


(Joins sheet 31) R. 10 E.
380 000 FEET
(Joins sheet 33)
T. 15 N.
1 280 000 FEET
1 270 000 FEET
375 000 FEET
(Joins upper right)
WINSTON COUNTY
1 Mile
5 000 Feet
Scale 1:20000
1
2
11
12
13
14
SS
SR
PoB2
PoC2
TaC2
TaB2
SwE
OrD2
OrC2
OrB2
Ro
Oa
SmF
SmE
RuC
RuB
Mt
OrD3
Mv


(Joins lower left)
R. 10 E.
380 000 FEET
(Joins sheet 35)
T. 15 N.
1 265 000 FEET
1 245 000 FEET
375 000 FEET
WINSTON COUNTY
23
24
25
26
35
36
CH
Ak
St
SS
SwC
SwF
MaF
PoB2
PoC2
OrD2
OrC2
OrB2
SwE
SmF
Mt
Ro
RuC
TaB2
Oa

N

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 19 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1951 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

1 Mile
5000 Feet
Scale 1:20000